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Palo Alto Comprehensive Plan



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Palo Alto Comprehensive Plan

City of Palo Alto

California

November 29, 1976

1977-1990

WHEREAS, the Planning Commission of the City of Palo Alto has caused to be prepared a comprehensive long term general plan, including a map and a report, entitled "PALO ALTO COMPREHENSIVE PLAN, 1976," for the physical development of the city and of the land outside its boundaries which in the judgment of the Planning Commission bears a relation to its planning; and

WHEREAS, during the formulation of the comprehensive plan the Planning Commission has held extensive public meetings and received public comment regarding the proposed comprehensive plan; and

WHEREAS, said comprehensive plan has been reviewed and studied by the Planning Commission and the Planning Commission has held public hearings on the adoption of the comprehensive plan on June 2, 1976, and June 9, 1976, as required by law, at which all interested persons were heard; and

WHEREAS, notice of said hearings was given as provided by law; and

WHEREAS, the comprehensive plan has been prepared in conformance with all applicable provisions of law; and

WHEREAS, the Planning Commission has reviewed and considered the contents of the environmental impact report prepared and certified for the comprehensive plan pursuant to the provisions of the California Environmental Quality Act;

NOW, THEREFORE, the Planning Commission of the City of Palo Alto does RESOLVE as follows:

1. That the Map and descriptive material entitled "PALO ALTO COMPREHENSIVE PLAN, 1976," a true copy of which is attached hereto as EXHIBIT "1" and incorporated herein by this reference, with amendments thereto set out in EXHIBIT "2" attached hereto and incorporated herein by this reference, is hereby approved and adopted by the Planning Commission of the City of Palo Alto as the general plan of the City of Palo Alto.
2. That the Chairman of the Planning Commission be and hereby is authorized and directed to record this action upon said Map and descriptive matter of the comprehensive plan.
3. That the "PALO ALTO COMPREHENSIVE PLAN, 1976" as attached hereto and amended hereby be, and hereby is, certified to the City Council of the City of Palo Alto with the recommendation that it be adopted as the general plan of the City of Palo Alto.

ADOPTED this 9th day of June, 1976, by the Planning Commission of the City of Palo Alto by the following vote:

AYES:	Brenner, Carpenter, Cody, Gordon, Rack, Renzel, Steinberg
NOES:	None
ABSENT:	None

RESOLUTION NO. 203

RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF PALO ALTO RECOMMENDING ADOPTION OF THE PALO ALTO COMPREHENSIVE PLAN

s/Anne Steinberg
Chairman of the Planning Commission

RESOLUTION NO. 5291
RESOLUTION OF THE COUNCIL OF THE CITY OF
PALO ALTO ADOPTING A COMPREHENSIVE PLAN
FOR THE DEVELOPMENT OF THE CITY OF PALO ALTO

WHEREAS, there has been duly prepared and the Planning Commission of the City of Palo Alto has adopted and recommended a long-range, comprehensive general plan for the development of the city and of such land outside the city's boundaries as in the commission's judgment bears relation to its planning, consisting of a map and related diagrams and statements; and

WHEREAS, the Planning Commission by its resolution of June 9, 1976, has certified and recommended the plan to the City Council for its consideration; and

WHEREAS, the City Council has held at least one public hearing on the adoption of said comprehensive plan, notice of the time and place of which has been published and given in the manner provided by law; and

WHEREAS, the City Council has proposed certain amendments to the comprehensive plan certified by the Planning Commission and has referred said proposed amendments to the Planning Commission for a report as required by law; and

WHEREAS, the Planning Commission has submitted to the City Council a report on said proposed changes; and

WHEREAS, the City Council has certified and considered the contents of an environmental impact report for the proposed comprehensive plan prepared in conformance with the provisions of the California Environmental Quality Act and Title 11 of the Palo Alto Municipal Code; and

WHEREAS, the City Council desires to adopt said comprehensive plan, as amended, as the comprehensive general plan of the City of Palo Alto.

NOW, THEREFORE, the Council of the City of Palo Alto does RESOLVE as follows:

SECTION 1. The map and accompanying descriptive material captioned "Palo Alto Comprehensive Plan: 1976", as amended by the City Council, a true copy of which is attached hereto as EXHIBIT A hereby is adopted by the City Council of the City of Palo Alto as the comprehensive General Plan of the City of Palo Alto.

SECTION 2. Said Palo Alto Comprehensive Plan shall be endorsed to show that it has been adopted by the City Council of the City of Palo Alto.

INTRODUCED AND PASSED: November 29, 1976

AYES: Beahrs, Berwald, Carey, Clay, Comstock,
Eyerly, Norton, Sher, Witherspoon

NOES: None

ABSENT: None

ABSTAINING: None

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1

Introduction

Palo Alto's Comprehensive Plan is the result of more than three years work by the Planning Commission, City Council, a large number of citizens, City staff, and consultants. It presents a guide for future changes in the City recommended to the City Council by the Planning Commission after extensive public participation.

Process

The Plan results from a process of selecting a series of planning alternatives. Public hearings, development of information, and analysis of impacts upon the City resulting from implementation of these alternatives were all part of this process.

This Comprehensive Plan was the subject of formal Planning Commission public hearings and the subsequent recommendations of the Commission were reviewed by the City Council at public meetings. Comments expressed in writing and at the meetings influenced both bodies in reaching decisions on the Plan.

Although this Plan has now been formally adopted, the Municipal Code requires the Planning Commission to review the Plan annually and recommend to the Council any modifications which the Commission considers necessary in the light of any change in conditions.

The Planning Area

The Plan is for public and private properties within the Palo Alto planning area. The planning area includes land within the Palo Alto City limits and unincorporated areas including Stanford University lands in Santa Clara County and several parcels in the Baylands and upper foothills. Adoption of the Plan by the City Council will not necessarily commit Santa Clara County to use the policies and programs in the unincorporated areas, however.

The Intent of the Plan

State law provides for and the City Code requires a comprehensive plan that looks at all aspects of physical growth. Attitudes toward growth, environmental protection, and social responsibility have changed markedly since Palo Alto's last Comprehensive Plan was prepared in 1963.

This new Plan is long-range and comprehensive, but it still must provide guidance toward solving today's problems. Some proposals can be carried out now; others may be 15 or 20 years in the future. In the case of transit, this Plan can only recommend directions because technology and public acceptance are likely to change rapidly in the next few years.

The Plan includes all physical elements of the City that require large land areas, for example, land use, traffic circulation, and school and park facilities.

Several subjects of City-wide concern are not addressed in the Plan. Social programs as such are not included, although nearly all proposals have social implications. Thus, child care, crime prevention, and recreation programs are not included. Although problems of energy conservation and water conservation are not included in this document, it is intended that these subjects be addressed in the near future.

Some major decisions affecting land use have been made: the foothills and Baylands are to remain open. The remainder of the City is nearly built-up. However, there are strong economic forces that could bring major changes.

If the City takes no action to change present trends and policies, these are some of the things we can expect by 1990:

- Housing units will increase 7.6 per cent from 23,800 in 1974 to 25,600 units. Single family units will decrease by 200 to 15,300 because of demolitions resulting in apartment construction. Apartment units will increase by 2,000 to 10,300 in 1990. Most new households will be childless, and housing costs in Palo Alto will rise faster than in the rest of the Bay Area.
- Palo Alto employment will increase 36.7 per cent from 59,600 in 1974 to 81,500, led by a gain of 8200 in the electronics industry. About 68,000 of these workers will commute into Palo Alto, mainly from the south.
- If employment trends and travel habits do not change, the number of automobile trips in the City will be 40 per cent greater than in 1974.

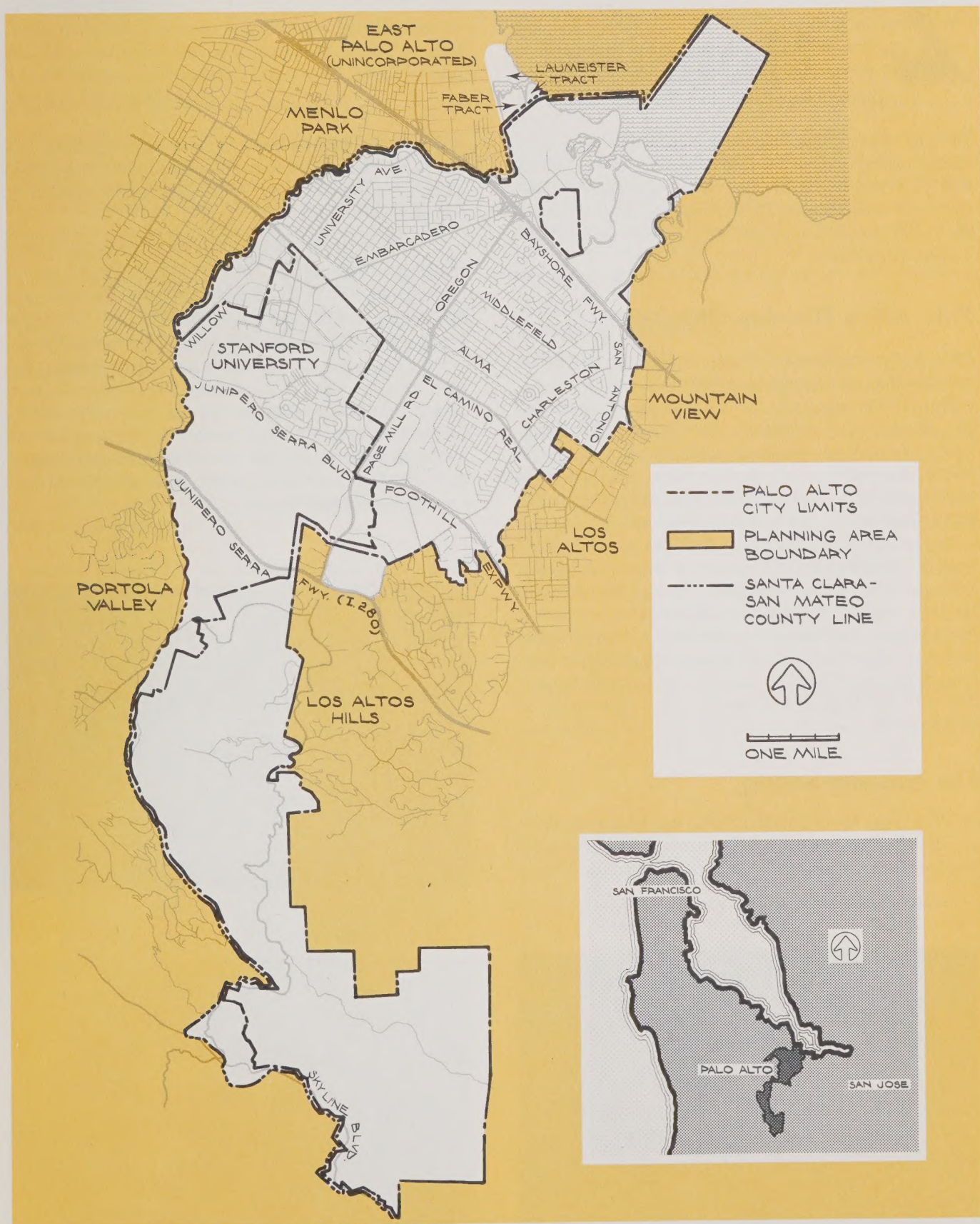
Major Proposals

There are five major proposals in this Plan:

1. Maintain the general low density character of existing single family areas.
2. Slow down employment growth.
3. Maintain existing housing and provide some new housing for low, moderate, and middle income households.
4. Reduce the growth of auto traffic.
5. Change the appearance and function of El Camino Real.

Implementation

This Plan, adopted by the Council, is an official policy framework for guiding decisions both on private projects and on City capital expenditures. The City will also use the Plan as the basis for reviewing and recommending on projects in the unincorporated area.



Palo Alto, a city of approximately 25 square miles, is located 35 miles from San Francisco and 15 miles from San Jose. Palo Alto is the only South Bay community whose lands extend from the middle of the Bay to Skyline Ridge in the Santa Cruz mountains. The Palo Alto planning area includes the City of Palo Alto, adjacent unincorporated areas in Santa Clara County, and the City-owned unincorporated Faber and Laumeister tracts in San Mateo County.

2 Housing

The goal of keeping Palo Alto a fine residential community makes housing one of the most important factors considered in the Comprehensive Plan. Housing is important, not only in its own right, but also because it strongly influences the size of the population and its distribution in age, background, and income.

Palo Alto's Housing Objectives

What directions should housing in Palo Alto take to maintain and enhance present residential qualities?

First, it is important to maintain the character and physical quality of residential neighborhoods. Palo Altans want to avoid drastic changes in neighborhood character, to reduce the intrusion of through-traffic into residential neighborhoods, to protect neighborhood quality, to improve visual quality, and to prevent deterioration.

Second, it is important to maintain a diversity of housing opportunities. This means a variety of housing types and sizes, a mixture of ownership and rental housing, and a full range of housing costs. This diversity of housing opportunities, available in an atmosphere of open and free choice for all, will then accommodate the desired population diversity—a variety of household sizes, especially families with children; all age groups, and a wide range of income levels.

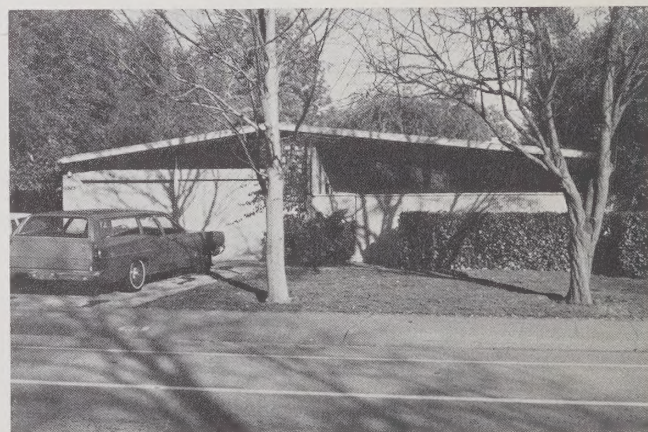
The Housing Supply

In 1975, Palo Alto's 23,800 housing units made up about one-sixth of the housing in the Midpeninsula area from Redwood City to Sunnyvale. In addition, Stanford Univer-

sity provides space for about 7100 students including 1450 apartments for married students. There are also 700 campus units for faculty and staff. These units are not available on the open market.

Two-thirds of Palo Alto's units are single-family homes, but about 20 per cent of them are rented. Owners occupy just over one-half of all the housing units in Palo Alto. The percentages of single family units and owner-occupied units are similar to most other large Midpeninsula communities.

Palo Alto's housing is closer in age to the housing in San Mateo County than it is to other communities in Santa Clara County. Almost 40 per cent of Palo Alto's housing was built before 1950 and another 40 per cent between 1950 and 1960. Since 1960, while Palo Alto was constructing only 20 per cent of its housing, the rest of Santa Clara County was building 50 per cent.



Palo Alto's single-family homes come in many styles, sizes, and ages.

There is greater demand for housing in Palo Alto than can be met. This is because Palo Alto is a desirable place to live, there are many jobs, and there is little land available for new housing development. This has led to high housing costs and low vacancy rates.

The median market value in 1970 of owner-occupied housing in Santa Clara County was \$27,300, almost 20 per cent higher than in California as a whole. At the same time, the median value in Palo Alto was almost \$33,900, and more than 15 per cent of Palo Alto's owner-occupied housing was valued at over \$50,000. Palo Alto had almost twice as much of its ownership housing (46 per cent) priced above \$35,000 as the whole of Santa Clara County and less than half as much (17 per cent) under \$25,000. No other city of over 50,000 population in the county showed such a divergence from the county pattern.

Although more than 50 per cent of Palo Alto's ownership housing was valued under \$35,000 in 1970, less than 10 per cent now is available for that price. Units under \$25,000 are almost gone from the market. Between 1970 and 1975 the median house value increased to \$56,000, a jump of more than 50 per cent.

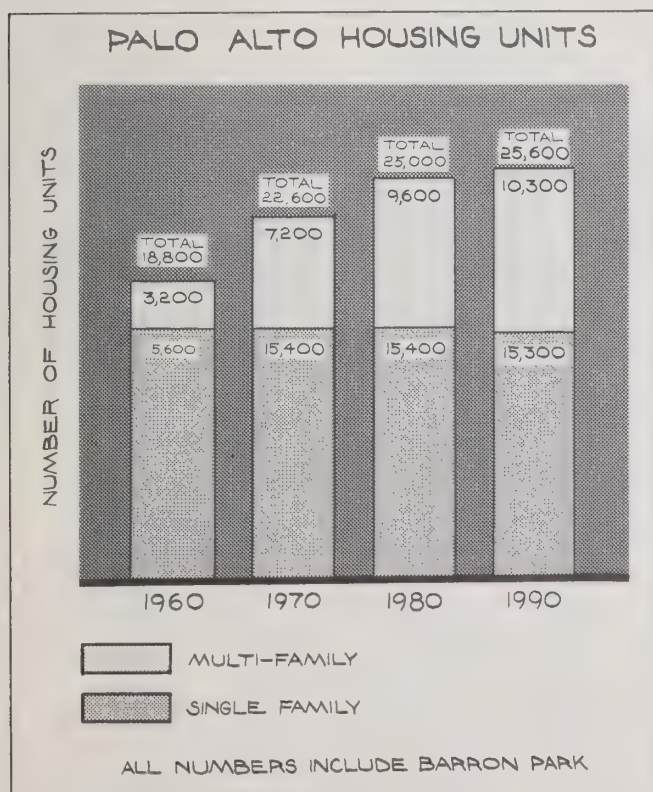
Similar, although less severe, cost escalation has occurred in rental housing. About 70 per cent of Palo Alto's rental

housing was available for under \$200 per month in 1970, but only a little more than 50 per cent was available at that same level in 1974, mostly in smaller studio and one-bedroom units. One-sixth of the apartments in Palo Alto in 1974 were renting for \$275 per month or more.

Despite the high costs, the vacancy rates for both ownership and rental housing have been stable at below three per cent in recent years due to the strong housing demand. The federal Department of Housing and Urban Development defines "shortage" or "tight" market conditions as an overall rental vacancy rate of three per cent or less and an apartment vacancy rate of five per cent or less.

Looking To 1990

In theory, Palo Alto's present residential zoning pattern could hold almost 38,500 housing units. The only way this total could be reached is if all buildings in Palo Alto were removed and the City were completely rebuilt from scratch at maximum density. A more realistic estimate of full residential development is much lower because much of Palo Alto's housing is already built up and is unlikely to be redeveloped, and development in the past has not usually occurred at maximum density. Building on all remaining residentially zoned vacant land would result in a total of about only 25,750 units in the City. There will be construction on other than vacant land, however. Most new multi-family units will be built on redeveloped land, replacing older single-family units in areas already zoned for multi-family use. Because of this kind of expected redevelop-



If current development patterns continue in Palo Alto an increase in the number of housing units is projected based on the expected addition of new multi-family units. New single-family construction will only replace demolished single-family units in 1980 and will fall short of replacement in 1990.



The average of the estimated market values of three typical single-family homes in Palo Alto increased 75 per cent from April, 1970 to April, 1975, according to the Northern California Real Estate Report.

opment, a realistic estimate of full development in Palo Alto is around 27,500 units.

Only middle-income and high-income households will be able to rent or buy new multi-family units, unless efforts are made to make some units available to low- or moderate-income households. The new single-family units will be so expensive that only high-income households will be able to afford them. At the same time, the City's present supply of lower cost housing will be diminished through removals to make way for the new construction.

The anticipated increase in the proportion of multi-family housing does not necessarily mean a parallel increase in the proportion of rental housing because of the recent popularity of condominium units, which are usually owner-occupied. Condominiums are likely to continue to account for a large proportion of the new multi-family units built in Palo Alto.

Decent, Safe, and Sanitary

Not all units in Palo Alto are decent, safe, and sanitary. More than four per cent of Palo Alto's housing was substandard in 1970. These units were predominantly lower-cost rental units surrounding Downtown which:

- lacked private plumbing facilities or adequate heating equipment or both.
- were dilapidated to the point of endangering the occupants and should have been extensively repaired or torn down.

Original quality and level of maintenance, perceived redevelopment potential, and ownership are important in predicting future housing quality and neighborhood character.

Neighborhoods where original quality and the level of maintenance are low are likely to get worse without remedial action. Older single-family houses in neighborhoods zoned for multi-family use are often allowed to deteriorate because owners are waiting for the time when opportunities for higher density redevelopment will make the property more valuable. This process has been evident in the neighborhoods zoned for high-density residential use surrounding Downtown.

Absentee owners often are not willing to invest in expensive repairs and improvements and tenants cannot be expected to do so. Absentee ownership is prevalent and profitable in many single-family areas because of Palo Alto's tight housing market.

The People

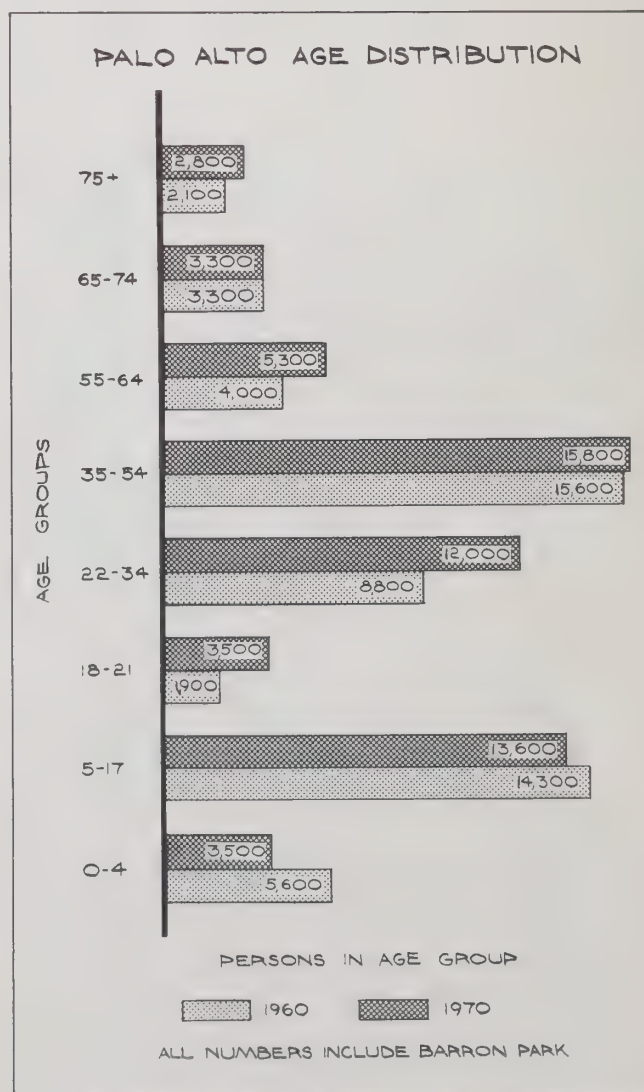
There are 56,000 people living in Palo Alto, and about 11,000 living on the Stanford University campus.

Palo Alto's population is rising in average age. Persons 60 years and older make up almost one-seventh of Palo Alto's

residents, a higher proportion than the national average, but lower than in neighboring Menlo Park. The highest concentration of seniors in Santa Clara County is found in the Downtown area of Palo Alto. At the same time as the percentage of seniors is increasing, the percentage of children is decreasing. Children under 18 made up 28 per cent of Palo Alto's population in 1970 as compared to Santa Clara County's 37 per cent. Enrollment in the Palo Alto Unified School District has been declining steadily in recent years because of the drop in the birth rate and the tight, high-priced housing market which causes most families with young children to seek housing elsewhere.

Six per cent of Palo Alto's population is between 18 and 21 years old. Stanford students living in Palo Alto account for a large number—almost 2000 people—in this age group.

Ethnic minorities make up about 13 per cent of Palo Alto's population. People of Spanish language and surname are the largest group, accounting for almost half of the minority population. Asian-Americans are a little more than



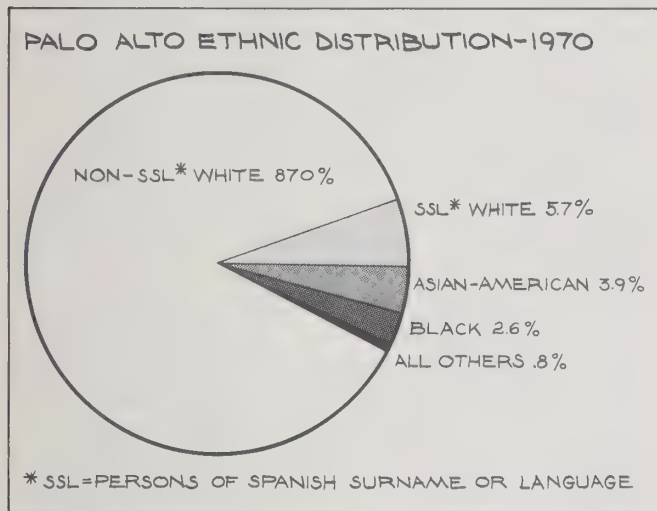
Palo Alto's population is shifting toward an older composition.

one-third of the minority population and about four per cent of the total population. Blacks are one-fifth of the minority population and less than three per cent of the total population, and others are less than one per cent of the total population.

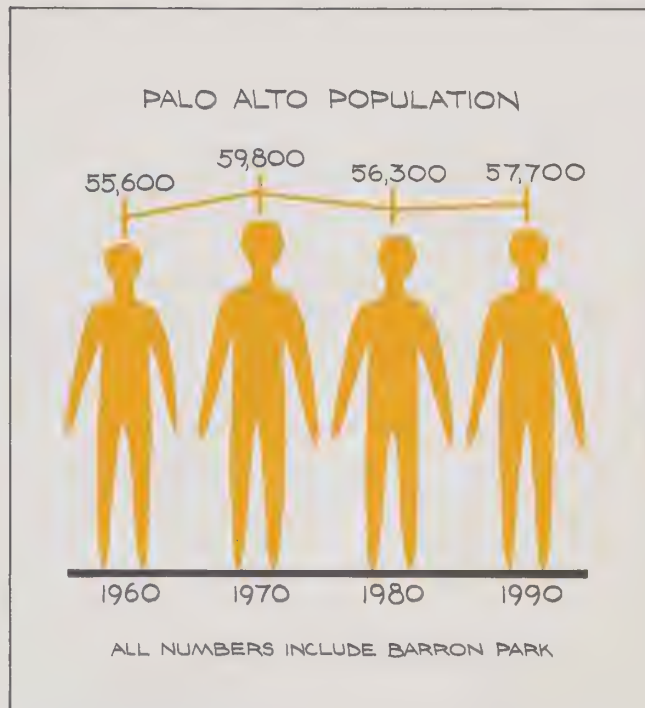
The 1970 Census showed that Palo Alto had the second highest average family income of any city of 25,000 or more in the Bay Area. Average household income ranked

somewhat lower because of the large number of lower-income senior and student households in Palo Alto.

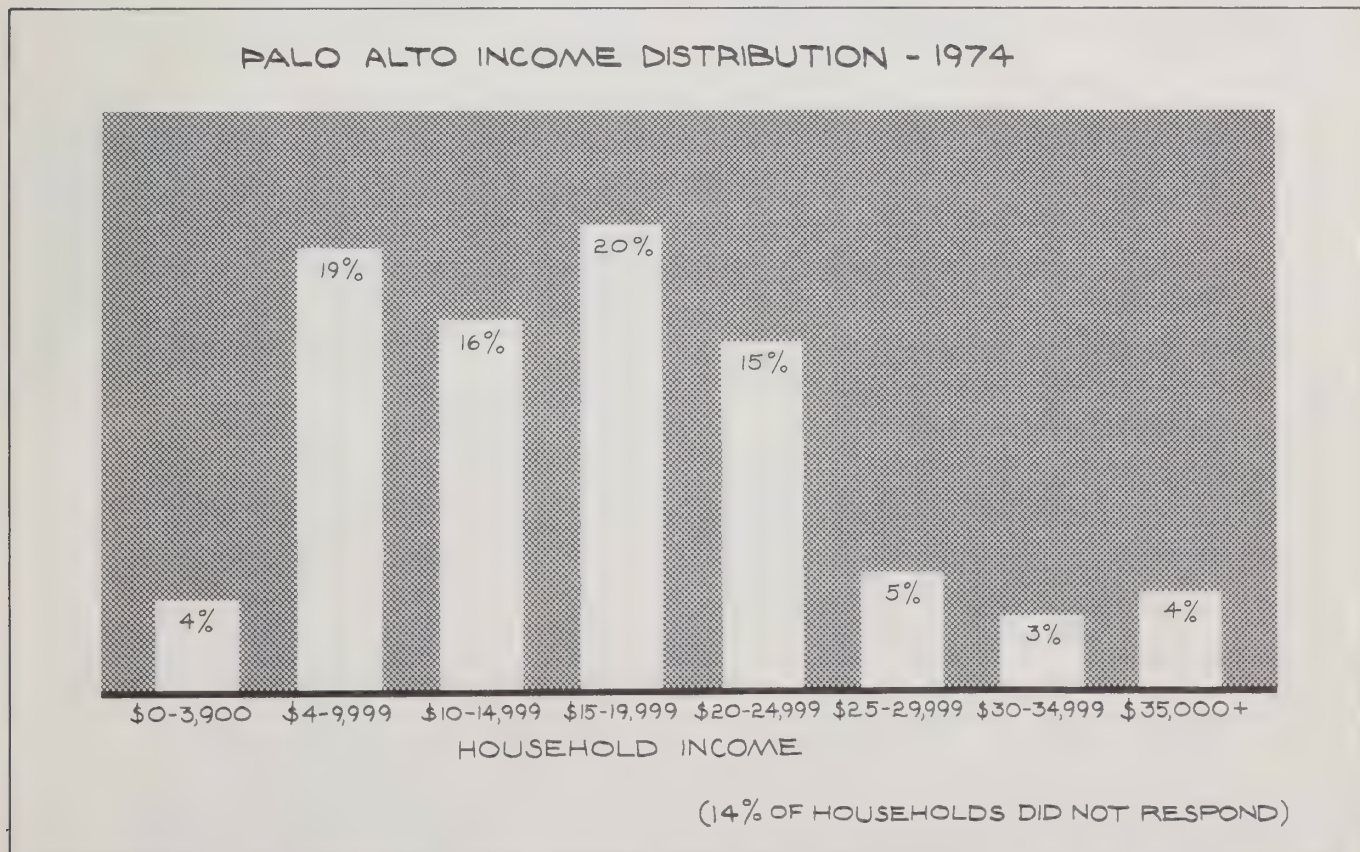
Changes in population characteristics go along with



Thirteen percent of the population in Palo Alto is made up of ethnic minorities.



The City's population is likely to remain relatively constant even though the number of households will increase. This results from the downward trend in the number of persons per household.



The median income of all households in Palo Alto was estimated to be approximately \$15,000 in 1974.

changes in the housing inventory. The average household size will continue to decrease as families mature and older children leave home, as young married couples have fewer children, and as the proportion of one- and two-person households increases along with the increase in multi-family units. Palo Alto's population will continue to rise in average age.



Palo Alto will have more households of older persons and young adults without children. This will continue the downward trend in the number of persons per household.

Average Palo Alto income is likely to increase faster than the Bay Area average because of higher income required to afford the new housing units, increasing costs of existing housing, and the displacement of lower-income households through redevelopment.

Housing Needs, Policies, and Programs

Maintaining Palo Alto's residential qualities is uppermost in most people's minds. Because Palo Alto is a fine residential community now, some Palo Altans see no need for any further City involvement in housing. But staying the same often requires more involvement than letting unwanted change occur.

The following policies and programs have been developed to deal with the need for attention to neighborhood character, housing quality, new housing, and diversified housing opportunities. Residential amenities such as schools, parks, and city services, which are not directly related to housing, are not discussed in this section.

Neighborhoods

Protecting existing neighborhoods is an important element of Palo Alto's housing policies because Palo Altans want to avoid change in the residential character of the City.

Policy 1: *Maintain the general low-density character of existing single-family areas.*

Policy 2: *Preserve older single-family homes and small apartment buildings.*

In single-family zones, which are over 90 per cent of Palo Alto's residentially-zoned land, this will not be difficult because little new construction will take place. New single-family homes will be built on the few remaining vacant sites scattered throughout the areas. However, because of the scarcity of vacant land zoned for multi-family use, new multi-family construction will usually replace older homes on land zoned for multi-family use. To reduce the changes in neighborhood character created by this redevelopment, it is necessary to retain some of the older homes which are in danger, especially Downtown. This could help maintain a range of housing prices because the older homes are usually less expensive per square foot than the new multi-family units which would replace them. Even these older houses would be too expensive for low- and moderate-income families.



Construction of large multi-family housing developments can change the character of existing neighborhoods.

Several specific programs have been developed to preserve older single-family houses and small apartment buildings.

Program 1: In areas adjacent to the Downtown shopping area, adjust allowable densities.

Bands of decreasing density surrounding Downtown will provide a transition from the commercial area to single-family zones. The highest density will adjoin the Downtown commercial district, decreasing to the lowest density next to single-family areas.

Program 2: Develop a minimum lot size for single-family neighborhoods that would discourage splitting of larger lots.

Program 3: Include in the Zoning Ordinance provision for a cottage/duplex zone which will allow more than one detached single-family dwelling under one ownership on one property.

In most single-family areas, the splitting of larger lots will have an adverse effect by gradually increasing density and traffic. However, in some older areas, such as around Downtown, the addition of cottage units will not noticeably affect the overall density. If both old and new units are retained under one ownership, much-needed rental housing would be provided.

Policy 3: Define, protect, and enhance those qualities which make Palo Alto's neighborhoods unique and desirable.

For example, neighborhoods can benefit from having defined gateways and focal points. These may be established by a clump of trees, sculpture, planting or other means. How housing relates to adjacent uses is also important.

Program 4: Through the Zoning Ordinance, appropriate codes and specific plans, describe the desired interactions at the edges of housing areas.

Areas where housing touches other uses are best defined by a description of interactions which relate scale, noise, light, and visual interchange.

Housing Quality

Individual units are important in setting the overall character of an area, although character is more than the sum of these units.

Policy 4: Define and preserve housing quality.

The Zoning Ordinance and Map set broad standards for how structures relate to one another, the street system, and public facilities. The Architectural Review Board applies design standards. Standards which define desired results rather than specifying the means for achieving them are most useful. Maximizing privacy, natural light, and outdoor space and minimizing undesirable contacts with traffic are desired results for individual units. Tying density to the availability of facilities such as transit, shopping, and recreation is a desired general land use pattern.

Program 5: Through the Zoning Ordinance and appropriate codes, set standards relating to desired results in housing.

Enforcement of the Building Code ensures that structural quality remains high. Code enforcement applies quality control standards systematically to all new housing construction. Existing housing needs attention too, particularly

older units. Enforcement of the Housing Code, which sets standards for existing housing, is now voluntary or handled by complaint.

Policy 5: Support locally assisted housing rehabilitation.

Certainly not all older houses in Palo Alto need rehabilitation; many have been well-maintained over the years. However, there are sections of the community that will begin to turn downward unless the normal processes of deterioration are reversed. These areas need rehabilitation now, before major problems arise.

Rather than start a program of mandatory code enforcement, the City Council, in May, 1974, voted to establish a voluntary, locally assisted rehabilitation program to aid present code enforcement.

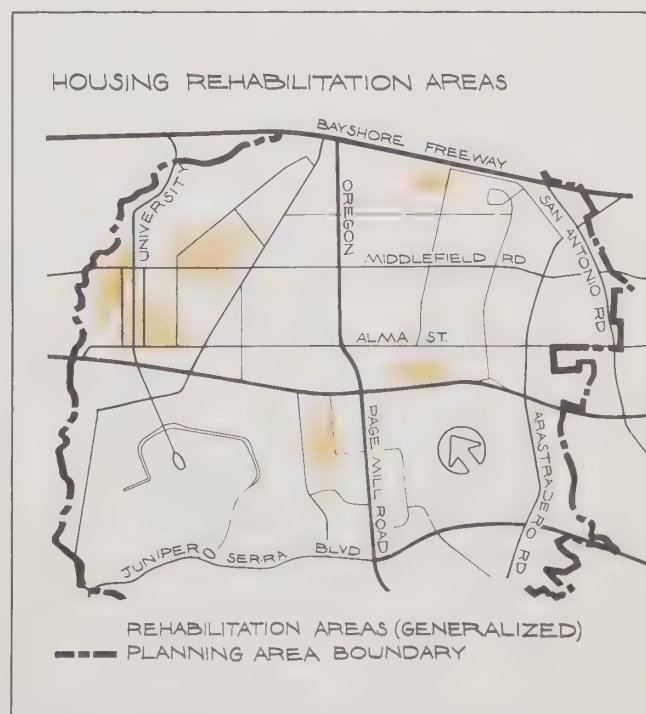
Program 6: Continue the present level of code enforcement.

Program 7: Encourage housing rehabilitation in single-family areas by providing City code inspection.

The City has started to promote code inspection through increased publicity as a service to residents and as a deterrent to neighborhood deterioration.

Program 8: Provide rehabilitation assistance to designated areas of Palo Alto.

The program the City Council established in 1974 relies on Federal Community Development Block Grant funds. The program provides low-interest loans and, in cases of demonstrated need, no-interest hardship loans. Rehabilitation



Housing rehabilitation is needed in several areas of the City. Precise boundaries for areas should be defined as the City rehabilitation program expands to each area.

assistance is being concentrated in areas which are residentially zoned in order to have the most favorable impact on the neighborhood and to promote long-term housing conservation. Priority conservation areas were designated in these ways:

1. Areas of older houses which may deteriorate;
2. Areas in which owner-occupants need financial help to improve their property;
3. Areas in which tenants would be most likely to be displaced or suffer hardship as a result of higher rents associated with unassisted rehabilitation; and
4. Areas with structures of historical or architectural value and significance.

Rehabilitation is expensive, and present occupants, especially renters and senior citizens with limited income, may not be able to afford the additional costs unless they have financial help. The Home Repair Program, which is administered by the Senior Coordinating Council and partially funded by the City, provides subsidized home repair services to assist seniors. For renters, participating landlords are asked to make their units available for federal assistance programs in order to avoid displacing lower-income tenants.

Other obstacles to rehabilitation can be eliminated.

Program 9: Building permit fee schedules which discourage rehabilitation should be adjusted to promote rehabilitation of existing housing.

Priorities For New Construction

New housing construction in Palo Alto should be directed towards filling identified community needs.



Building apartments above new stores and offices would increase the housing supply and make shopping areas more attractive. This type of development is quite common in many American and European cities.

For instance, new housing is needed to go with new jobs so some employees can live near their work. This would reduce additional stress on the housing market and prevent increased traffic congestion. However, there are few chances to increase significantly the number of housing opportunities close to employment on vacant residential land. Housing development on land zoned for non-residential use would provide more housing.

Policy 6: Support the mixing of residential uses in commercial and industrial areas.

Mixed-use residential and commercial structures offer promise of increasing the housing supply by re-establishing apartments over stores as a standard building type. These apartments would also improve the urban design quality of the City's commercial districts by adding variety and visual enclosure to shopping streets.

Program 10: Provide incentives for all new retail and office construction to provide some proportion of residential space on or near the same site.

Program 11: Facilitate development of residential units on air rights over public and private parking lots in commercial and industrial districts.

It is also necessary to provide new housing for families with children to maintain a balanced community, despite the trend to smaller households.

Policy 7: Encourage the development and provision of three- and four-bedroom ownership and rental units in order to provide housing more suitable to families with children.

Program 12: Through the Planning Commission and Architectural Review Board, encourage provision of three- and four-bedrooms units in all proposed residential developments which come before the City for zoning changes, subdivision approval or architectural review.

Program 13: In the revision of the Zoning Ordinance establish procedures which would encourage three- and four-bedroom units.

The Cost of Housing

State and federal policies call for communities to provide housing for all income groups, and Palo Alto tried in the 1970s to see that there are housing opportunities for people of a wide range of incomes. But, the trend toward ever-escalating housing costs continues. Housing costs everywhere are rising due to the general inflation in materials and labor and the recent steep increases in interest rates. Additional local reasons for the increase are the high demand for housing in Palo Alto, which is heightened by the scarcity of land available for new housing development,

the demolition of lower-cost units to make way for expensive new construction, the conversion of existing rental units to higher-cost condominiums, and the large number of jobs.

When the price of housing goes up, large segments of the population gradually become unable to compete for housing in Palo Alto:

- Middle- and moderate-income households, particularly those with children, who cannot afford to buy a home in expensive housing areas.
- Seniors on limited incomes, such as pensions and Social Security, which are not sufficient to keep up in a tight housing market.
- Households with low-paying jobs or on public assistance who cannot afford high rents.

Students also generally have limited financial resources. Those who do not want to live on campus or who cannot be accommodated there because of lack of space in the campus housing system are, however, often able to compete in the housing market because they are willing to share units with others.

There is no way to estimate the number of households who, although they want to live in Palo Alto, live elsewhere because they cannot afford to live here. Others with strong enough reasons do decide to live in Palo Alto no matter what the costs. The costs include not only paying more than they want to for housing, but also living in units which are structurally inadequate or overcrowded.

In 1970, 3600 Palo Alto households, over 15 per cent of the total, fit the federal standard for "lower income" and were living in inadequate housing conditions:

- occupying units lacking some or all plumbing;
- with more than 1.25 persons per room;
- paying more than 25 per cent of their income for rent and/or
- occupying housing more than 30 years old and valued at less than \$10,000.

Almost all of these households needing assistance are renters, 30 per cent are seniors, and 18 per cent are handicapped. Since 1970, about 600 assisted housing units have been made available for low- and moderate-income households in Palo Alto.

Seniors are particularly susceptible to the hardships generated by rapidly inflating housing costs. Although most seniors now living in Palo Alto would like to stay, many are finding the expenses of increased rent or higher property taxes more and more difficult to sustain. This is not surprising considering that about 2000 seniors, or one-quarter of the total senior population in Palo Alto, have annual incomes of less than \$3000. One out of four seniors rent and over one-quarter of these pay more than 40 per cent of their income for rent. Housing complexes for

seniors of low- and moderate-income have so many requests that some have stopped taking names for waiting lists.

These figures are based on the housing situation at any one time. Annual estimates of housing need are included in Palo Alto's Housing Assistance Plan, which is required as part of Palo Alto's annual application for the Community Development Block Grant Program.

It should be recognized that as Palo Alto is made an even more desirable place to live, demand for housing will increase, bidding up prices even further. This makes it even more important to have public policies which encourage housing which can be afforded by low- and moderate-income households.

The Cost of Buying a House		
House Value:	\$56,000 (Median House Value in Palo Alto)	
Initial Costs:	20 per cent downpayment	\$11,200
	points	680
	closing costs	1,120
		<u>\$13,000</u>
Monthly Costs:	mortgage payment (9½%)	\$375
	taxes	120
	insurance	20
		<u>\$515</u>
January, 1976		

Utilities and maintenance add substantially to the monthly cost of owning a house, but were not included in this table because they are not constant. Only high-income households can afford to buy homes in Palo Alto.

Without such policies and programs the supply of lower-cost housing will continue to dwindle and low- and moderate-income owners and renters will continue to be pushed out of Palo Alto by redevelopment, conversion, rising rents, and higher taxes.

Many Palo Altans, not only those on the verge of being squeezed out, are concerned about the loss of the diversity and balance the community once had.

Condominium Conversion

Most of the lower-cost housing in Palo Alto is rental units. Many conversions of rental apartments to condominium ownership threatened to cause a substantial decrease in this supply. Because the monthly carrying cost of a condominium is almost always higher than a comparable rental unit, tenants, especially seniors, are often displaced in conversions. A 1974 survey showed that conversions in Palo Alto had a displacement rate of 82 per cent. Not all of the displaced tenants left because of higher costs; some simply preferred renting to owning.

Policy 8: Maintain at least the present number of multi-family rental units.

Program 14: Continue the adopted condominium conversion ordinance.

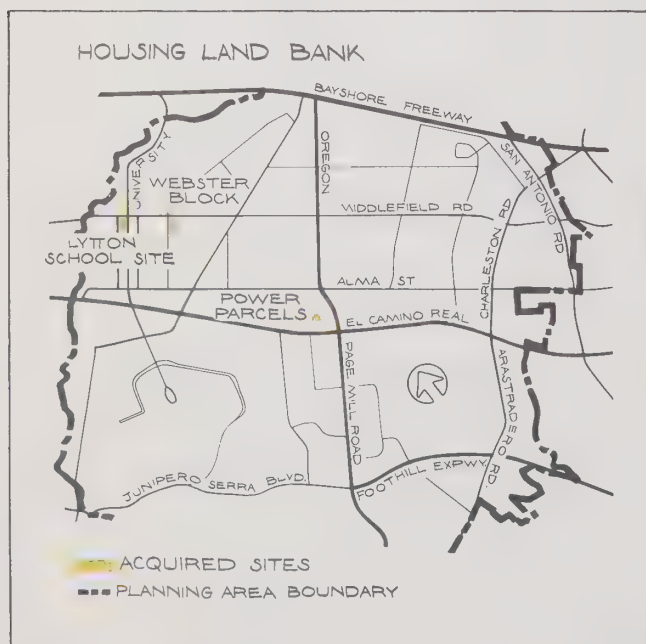
Palo Alto has adopted an ordinance which restricts the conversion of rental units to condominiums until an adequate vacancy rate exists in the community to provide enough housing choice for displaced tenants.

Working with Other Levels of Government

Policy 9: *Encourage and participate in low- and moderate-income housing programs financed by other levels of government.*

Most of Palo Alto's housing activities have been City programs to make federal assistance programs more effective here.

Program 15: Continue the Land Bank Program for purchasing parcels for housing development for low- and moderate-income families and seniors.



The Lytton School site Downtown was acquired in late 1970. Most of the 1971-72 funds allocated to the Land Bank Program were used to purchase the Webster Block, also near Downtown. A third site, the Power Parcels south of the California Avenue business district, was purchased in 1975.

The Land Bank Program provides for City purchase of sites for resale to developers interested in providing lower-cost housing. The construction of this housing would be unlikely without both a land bank program to make the land available and federal assistance to lower housing costs. The purchase fund is replenished at the beginning of each fiscal year to \$500,000. Outright purchase of desirable properties is emphasized. The City does not own or operate housing as part of the program.

Program 16: Continue the local rent supplement (Piggyback) program to augment the federally-assisted leasing of privately-owned units for low-income families and seniors.

The Piggyback Program was created when it became apparent that the maximum rents payable by the Santa Clara County Housing authority under its federal housing assistance program were too low to make the Housing Authority a real competitor for units in Palo Alto's tight housing market. The present Piggyback agreement provides a \$50,000 three-year City subsidy to the Housing Authority to enable it to lease units in Palo Alto. In 1976, the Housing Authority used the funds to help lease 30 units.



Lytton Gardens, a 220-unit federally-assisted housing development for seniors of low and moderate income, was built on the first site purchased for the Land Bank.

Program 17: Assist developers who want to use state and federal housing programs.

In 1976 there were three major housing-related programs financed by the state and federal governments in which Palo Alto can participate. The federal Community Development Block Grant Program provides funds to cities and counties to upgrade neighborhoods by improving housing and community facilities.

1976 Federal Housing Assistance Program Income Limits

Persons Per Family	Maximum Income
1	10,100
2	11,600
3	13,100
4	14,500
5	15,400
6	16,300
7	17,200
8 or more	18,200

Income limits established for federal housing assistance programs could also be used for local housing programs.

The federal Housing Assistance Payments Program provides rental assistance to low- and moderate-income occupants of new and existing housing. The only state assistance available is through the California Housing Finance Agency, which provides financing for the construction of mixed-income housing developments to provide market units and units for low- and moderate-income people.

By keeping abreast of state and federal housing assistance programs, the City can provide information to developers interested in using the housing programs. City support is also often valuable in obtaining state and federal approvals. The City should encourage the simplification of state and federal procedures and efforts that will make these programs more responsive to Palo Alto's housing problems.

Local Actions

Policy 10: *Foster the provision of some new and existing units, dispersed throughout the City, for ownership and rental by households of low- and moderate-income.*

Local housing assistance programs in addition to those associated with state and federal programs are necessary to provide housing opportunities for the full range of income levels which Palo Alto wishes to continue to house.

Program 18: In new multiple housing developments of 10 or more units, not less than 10 percent of the units should be provided at below-market-rates to moderate- and middle-income families.

Program 19: Devise procedures to speed up processing applications for rezonings, subdivisions, and building permits so that the City gives priority to those proposals which acknowledge its policy for provision of below-market-units.

The possibility of a speeded-up approval process under Program 19 should be an attractive incentive to many apartment and condominium developers, and will encourage the provision of below-market-units. Residential densities in Palo Alto are not expected to increase substantially because of Programs 18 and 19.

Palo Alto's policy for the past several years has been that new housing developments of 20 or more units should include 20 per cent to 40 per cent low- and moderate-income units, depending upon the size or type of the development. Under this policy the staff has negotiated the provision of lower-cost units. Experience has shown that these units have accounted for about 13 per cent of the total units in developments of 20 units or more, and the price has been around \$30,000—too high to reach low-income households.

Moderately priced units are all that can practically be expected of developers. It is possible to maintain a "should" program and positively assist developers to provide moderately priced units. A 10 per cent moderately priced floor for all developments of 10 or more units will

provide a broader base for the provision of units than the current policy.

Palo Alto Housing Corporation

Program 20: Continue to support the Palo Alto Housing Corporation in the provision of low- and moderate-income housing.

The Palo Alto Housing Corporation was established in 1969 to encourage and develop low- and moderate-income housing in Palo Alto. It is an independent, non-profit organization whose board members serve without pay. In addition to its development activities, the Corporation has provided consulting services on housing to the City under contract since 1970.

Program 21: Support the establishment of a non-profit organization whose purpose would be to acquire, preserve, and manage housing at the lowest possible costs in a financially self-supporting program.

At the Council's request, the Housing Corporation has developed a proposal for a "Sub-Corporation." This non-profit organization would assist in the provision and preservation of low- and moderate-income housing in Palo Alto. The organization would operate City-wide to acquire or construct, rehabilitate where necessary, manage, and rent residential properties to provide housing at the lowest possible cost while maintaining a financially self-supporting program.

Open Choice

All of Palo Alto's efforts to provide a diversity of housing opportunities would be meaningless if that housing were not available in an atmosphere of open and free choice for all.

Policy 11: *Work towards the elimination of racial and other barriers that prevent free choice in housing.*

Programs to accomplish this policy are:

Program 22: Seek better state and federal enforcement of fair housing laws.

Program 23: Continue to contract with such groups as Mid-peninsula Citizens for Fair Housing to provide fair housing services.

Program 24: Continue the City-supported Rental Housing Mediation Task Force, a program of the Human Relations Commission, to prevent or remedy conditions which lead to problems between landlords and tenants.

Program 25: Continue the efforts of the Human Relations Commission to combat discrimination in rental housing.

The Desired Result

The policies and programs set out in the preceding pages are the framework of Palo Alto's housing program. Together these policies and programs will help Palo Alto to continue to provide a high-quality residential environment for the diversity of people who make up the Palo Alto community.

3 Employment

Palo Alto has become one of the major employment centers of the Bay Area partly because the City is close to Stanford University and is identified with it. Large amounts of land were zoned for commercial and industrial uses during the mid 1950s and several of this nation's largest electronics firms were founded in Palo Alto. Other industries chose to have facilities here because of the outstanding educational and research institutions as well as the fine residential areas and the outstanding municipal services. Business and professional service firms and retail stores were established in Palo Alto to serve the expanding market.

The City's commercial and industrial districts, in general, are characterized by well-designed buildings and low-density development patterns. This is in contrast to the concentration of high-rise office buildings and smoking factories found in many major employment centers. Palo Alto is an example to many communities on developing and maintaining attractive and successful commercial and industrial centers.

The City's businesses, which created the demand for more jobs, have also enabled Palo Alto's residents to enjoy one of the highest standards of City services in the nation at a very low municipal tax rate. This is largely because of the property taxes, sales taxes, and utilities revenues paid by these businesses. There probably is no other highly desirable residential community where the homeowner contributes such a small share of the City budget. Palo Altans have paid a price, however, in terms of traffic nuisance, air and noise pollution, ever-increasing capital improvements costs, and higher housing costs resulting from exceptionally strong demand.

Objectives

As an overall goal, Palo Altans have expressed a strong desire to preserve their fine residential community while maintaining the necessary commercial and industrial activities that help support the outstanding City facilities and services.

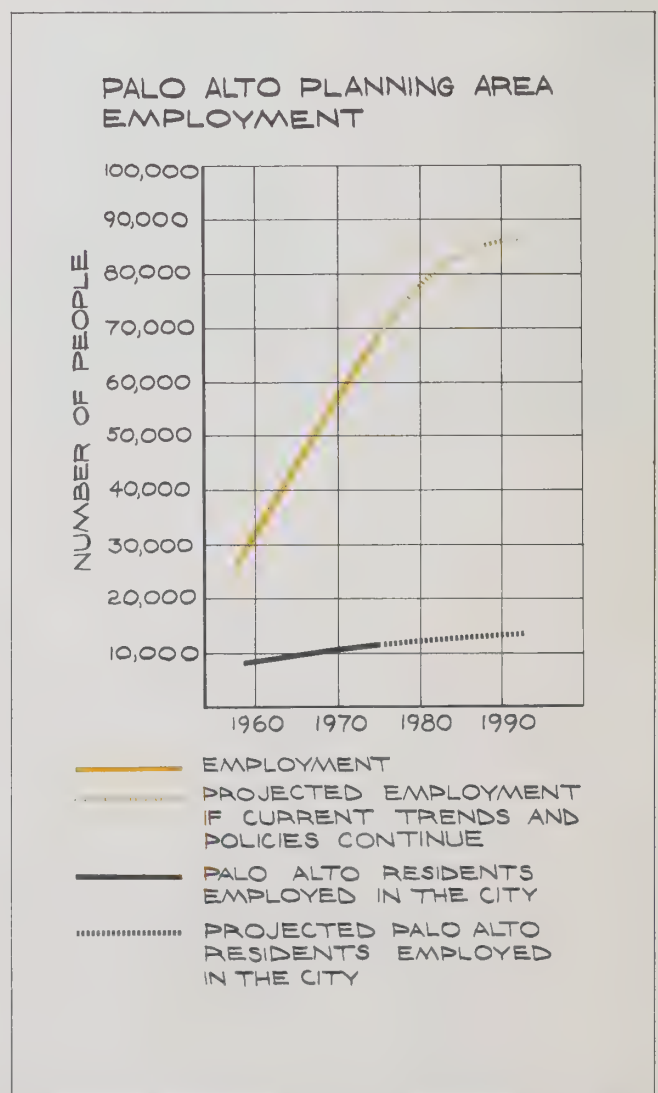
Objectives that are aimed at preserving the residential neighborhoods from increased traffic while maintaining the success and low density of Palo Alto's existing commercial and industrial districts are:

- Reduce employment potential.
- Low employment densities should be maintained where feasible.
- Existing businesses should be kept healthy and attractive.
- Industrial and commercial uses in Palo Alto should be clean, quiet, and otherwise compatible with the residential character of the City.

- Design standards for non-residential developments should be consistent and compatible with all applicable elements of the Comprehensive Plan.

A major problem for Palo Alto is the appearance and function of the commercial areas along El Camino Real, especially from Matadero Creek to the southern city limits.

- The balance of land uses along El Camino Real should shift from automobile and service commercial toward neighborhood commercial and residential.



Palo Alto planning area employment increased 70 per cent between 1960 and 1970. Employment in the total planning area by 1973 was estimated to be 65,000. Employment growth beyond 1990 will be limited because of lack of vacant industrial land. Stanford employment exclusive of the Medical Center and students working part-time is expected to remain at the present 5,000 level through 1990. Approximately 10,300 Palo Alto residents worked in Palo Alto in 1970 and 13,400 are expected by 1990.

Palo Alto has offered one of the highest standards of municipal services in the nation at a very low municipal tax rate. The City-owned and operated utilities, which serve commercial, industrial, and residential customers, through profitable operations, contribute substantially to the municipal budget. However, as municipal service costs go up faster than revenues, the level of municipal services or the amount of local tax revenues needed to finance these services will eventually have to change. The alternative would be an adjustment in both services and tax revenues.

- Satisfactory levels of service should be provided without substantial increases in municipal taxes.

Existing Conditions and Trends

The employment forecast prepared for the Comprehensive Plan showed that Palo Alto can expect substantial employment growth until 1980. The forecast assumes recent economic trends and current land use policies will continue. Between 1980 and 1990, the lack of suitably zoned vacant land will slow commercial and industrial expansion and employment growth is expected to level off. Development in the City's commercial and industrial districts should be completed by 1990 and significant employment increases are not expected to occur after that.

The Palo Alto Planning Area Employment graph illustrates Palo Alto's employment increase between 1960 and 1970 and the employment changes expected between 1970 and 1990. The forecast includes full-time and part-time employment for all of Palo Alto and Stanford University except for part-time student employment on the Stanford campus.

Employment Forecast By Employment District

	1970	1980	1990	Change 1970-90
University Avenue	7,100	9,000	10,500	3,400
California Avenue	2,600	3,600	4,600	2,000
Stanford Shopping Center	1,300	1,700	2,100	800
Stanford Professional Center	4,800	6,800	7,000	2,200
Stanford Industrial Park—Subtotal	20,400	30,500	32,500	12,100
San Antonio Area	7,950	12,200	12,800	4,850
Remainder of City	8,850	9,900	12,000	3,150
City of Palo Alto—Subtotal	53,000	73,700	81,500	28,500
Stanford University (unincorporated portion)	5,000	5,000	5,000	—0—
Palo Alto Planning Area—TOTAL	58,000	78,700	86,500	28,500

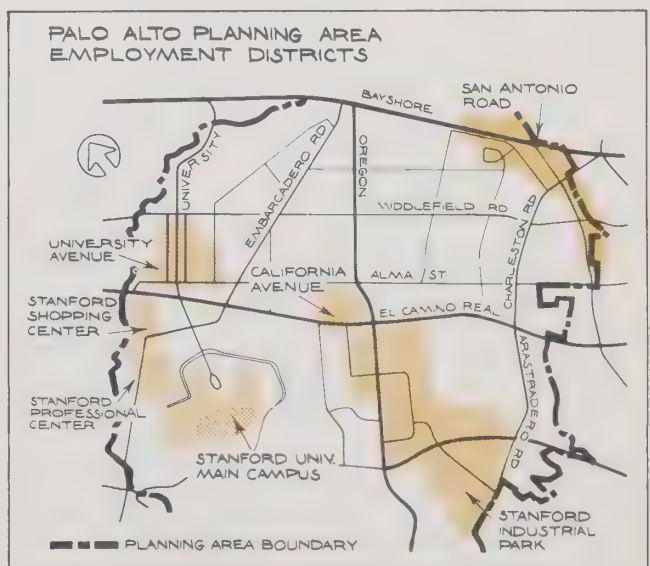
The forecasted employment growth in Palo Alto will be concentrated in service and manufacturing. The Palo Alto Planning Area Employment table shows this forecast by employment sector for Palo Alto and Stanford. Employment within the unincorporated academic lands of Stanford University is shown as a separate category.

Palo Alto has a number of major employment districts which have resulted from the City's zoning patterns and preferences of similar industries to cluster at one location. The 1970 employment total in these districts was over 44,000, or more than 80 per cent of Palo Alto's total jobs. The map shows these districts and the academic campus of Stanford University.

If Palo Alto's current development policies continue, more than two-thirds of the employment increase between 1970 and 1980 will occur in the City's two light manufacturing districts: the Stanford Industrial Park and the area around San Antonio Road. The smaller employment increase expected between 1980 and 1990 would be more evenly distributed because of the diminishing supply of available zoned land for new development in the City's commercial and industrial districts.

The table titled Employment Forecast By Employment District shows the employment forecast for Palo Alto and the academic campus of Stanford University. The forecast assumes a continuation of current development trends and City policies.

A critical impact of employment is the commute pattern of persons employed in Palo Alto and the effects on traffic congestion. The Midpeninsula reverses traditional patterns. Usually the affluent live at some distance from their jobs, but always close to transportation. On the Midpeninsula, higher wage earners live closer to their jobs.



Although land shortage will slow employment gains in the 1980s, development of industrial sites following current practices could result in 38,000 manufacturing jobs in 1980 and ultimately 40,900 in 1990 versus 23,200 manufacturing jobs in 1970. Beyond 1990 land shortages will severely limit employment growth.

The past and expected locations of jobs and workers in Palo Alto are illustrated in the graph of City of Palo Alto Commuters. This chart shows a comparison between the number of persons who commute into Palo Alto and the number who live here and commute out of Palo Alto. The forecast is based on a continuation of current policies. The greatest increase is for workers who commute into Palo Alto. This forecast is valid unless significant changes can be made in the projected employment level, in the total population of Palo Alto, or in the number of Palo Alto residents who work outside the City.

Palo Alto's Employment Related Problems

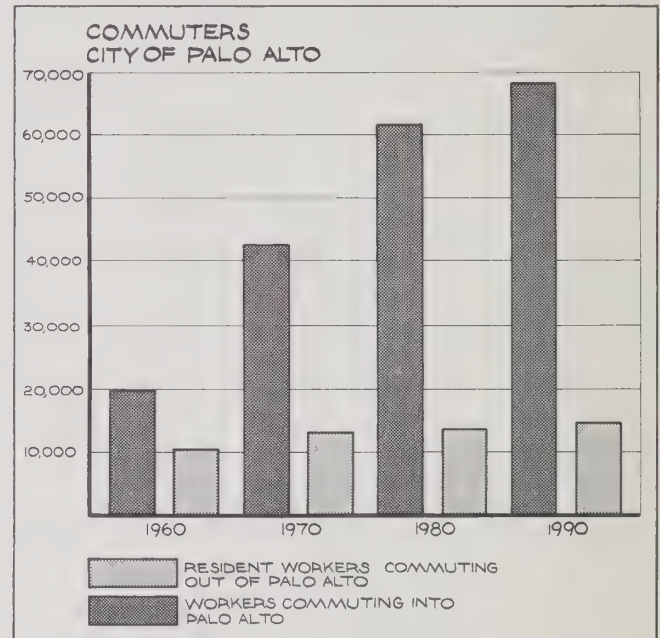
Traffic, housing, and capital expenditures are the problem areas which relate to employment.

Palo Altans are concerned that the City's residential character will change as employment increases. Established neighborhoods will have more commuters parking on their streets. Other neighborhoods will experience more traffic as commuters seek less congested routes. The appearance of the City also may change as commercial and some industrial development intensifies.

Traffic congestion is a problem, particularly during peak hours. Most persons who work in Palo Alto travel to work in private automobiles at peak periods. These commuters contribute to congestion on the City's arterial streets and on some residential streets.

Increased employment also affects the long-term parking problem, especially in the business districts on University and California Avenues. The problem has two sides. If more parking is provided, more commuters employed in these

districts will be encouraged to drive their cars to work and add to existing local traffic congestion. If additional parking facilities are not provided, some commuters will switch to other modes of transportation while some commuters will park their cars on the borders of these districts and disrupt the residential quality of some of the City's oldest neighborhoods.



In 1970 over 40,000 workers commuted into Palo Alto. If present policies prevail, by 1990 over 65,000 workers will commute into the City. The 13,000 persons living in Palo Alto and working outside the City in 1970 are not expected to increase substantially between 1970 and 1990.

Palo Alto Planning Area Employment
Employment (000's)

Employment Sector	1970 ¹⁺²	1973 ²	1980 ²	1990 ²	Change 1970-1990
City of Palo Alto					
Construction	1.3	1.3	1.4	1.4	0.1
Manufacturing	19.4	25.7	33.8	36.6	17.2
Transportation, Communication & Utilities	1.8	1.7	2.0	2.0	0.2
Trade	7.2	7.5	8.2	9.0	1.8
Finance, Insurance & Real Estate	2.8	2.9	3.4	3.8	1.0
Services	18.3	18.0	22.1	25.6	7.3
Public Administration	1.5	1.7	1.9	2.1	0.6
Other Industries	.7	.8	.9	1.0	0.3
Subtotal	53.0	59.6	73.7	81.5	28.5
Stanford University (unincorporated lands)					
Services	5.0	5.0	5.0	5.0	0.0
Palo Alto Planning Area—TOTAL	58.0	64.6	78.7	86.5	28.5

¹ 1970 Federal Census

² Gruen Gruen + Associates estimates and projections

Expanding employment will increase pressure on an already saturated housing market in Palo Alto and in the surrounding communities. The quality of housing, level of public services, public school system, proximity to regional transportation, and the character and magnitude of local employment all affect housing demands.

Expansion of commercial and industrial facilities and resulting employment increases will also generate the need for expenditures on such capital improvements as power substations, sewer, water and gas lines, and increased solid waste disposal facilities. Additional capital facilities will have to be constructed to support the expected commercial and industrial expansion.

Employment Policies and Programs

The following policies are meant to achieve the employment objectives and work on employment-related problems at the same time.

Policy 1: Reduce the projected employment by a significant proportion below the present 1990 forecast.

This policy deals with all three major problems identified with employment: traffic, housing, and additional capital expenditures. If expected employment increases are reduced, it is assumed that traffic congestion will not reach expected levels, pressure on the housing market will change, and the need for additional public capital expenditures will lessen.

1970 Palo Alto Inflow and Outflow of Workers		
Location	Homes of Persons Employed in Palo Alto	Work Places of Palo Alto Residents
Palo Alto	10,325	10,325
Stanford University (unincorporated portion)	500	1,479
Mountain View	5,804	1,042
Sunnyvale	4,675	1,059
Santa Clara	2,071	336
San Jose	5,310	665
Remainder S.C. Co.	9,400	1,256
San Mateo County	9,750	3,762
San Francisco	578	1,335
Alameda County	1,258	277
Elsewhere	608	1,886
Sources: 1) 1970 Census of Population, Journey to Work 2) Final Report, Palo Alto—Menlo Park Area Transportation Project		

This table shows the inflow or outflow of workers who either lived or worked in Palo Alto in 1970. The Palo Alto data refer to the 1975 City limits and therefore does not include Barron Park which was incorporated into Palo Alto in 1976.

Policy 2: The construction of housing should be encouraged in conjunction with non-residential development.

This policy advocates additional housing so that more persons who work in Palo Alto can live here and reduce both pressure on the local housing market and the private, public, and environmental costs required to make long commutes. Housing Programs 10 and 11 and Employment Program 6 encourage residential construction in conjunction with new commercial development and over parking lots in commercial and industrial districts.

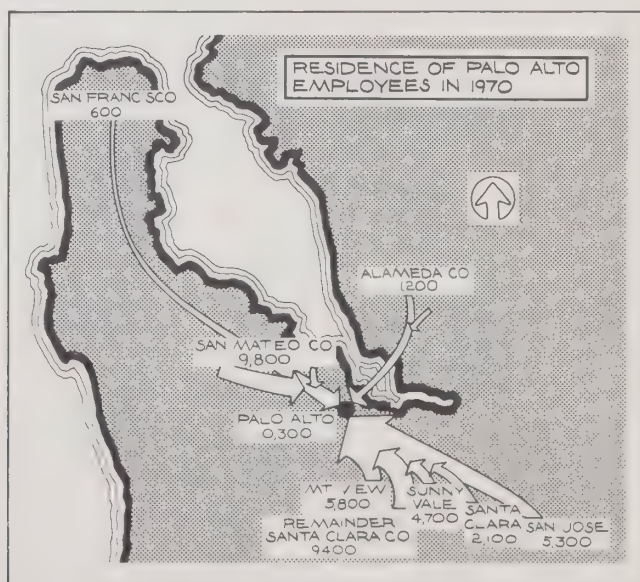
Six programs are recommended to support these two policies and put them into effect.

Program 1: Reduce non-residential site coverage limits to correspond to existing development patterns.

This program is primarily intended to reduce the expected employment increase in Palo Alto. It would be applied in this way: each of the City's commercial and industrial zones would be sampled to determine overall site coverage. The permitted site coverage in each zone would then be adjusted. This adjustment would, in most situations, lower the site coverage limits for future commercial and industrial development in Palo Alto.

Program 2: Establish procedures to permit housing beyond established zoning standards for industrial zones.

This program could reduce the anticipated employment increase somewhat, but essentially it relates to Employment Policy 2 and seeks to encourage housing at industrial sites. A revision in the zoning ordinance to permit housing construction at industrial sites would be required. This housing would not be calculated as part of the maximum site coverage permitted by the zoning ordinance for industrial development. Thus, the program could apply to



During the past 10 years, the number of workers commuting into Palo Alto has more than doubled, and is now above 40,000. Most of these persons commute into Palo Alto from the south and this trend is expected to continue.

existing or new industrial development. As the program continues, total site coverage limits will have to be established so that the entire area of an industrially zoned parcel could not be developed with a combination of industrial and housing uses.

Program 3: On El Camino Real, smaller vacant lots should be acquired for off-street parking to enhance existing uses.

This program is aimed at making healthier commercial areas and residential neighborhoods immediately behind El Camino Real more recognizable. Adequate parking is a major problem for commercial success on a busy throughfare like El Camino Real. Acquiring some smaller vacant parcels on El Camino Real for off-street parking would help existing businesses.

Program 4: Revise the zoning ordinance to deter further encroachment of offices in multi-family zones.

This program deals with the policy to reduce employment potential as well as the housing policies of preserving existing housing stock and enhancing Palo Alto's neighborhoods. The construction of offices in some multi-family areas is reducing the number of residential units and diminishing the residential quality of the neighborhood primarily through increased traffic and noise and the introduction of extensive parking areas.

Under this program, houses now used as offices could continue to be used as offices. They could also be replaced by new office buildings except where offices in older houses are acceptable only because of the character of the

buildings and not because of their location. Program 4 will be implemented through the new zoning ordinance.

Program 5: A new commercial zone should be defined which combines neighborhood commercial with some service commercial compatible with El Camino frontage and the residential neighborhood behind.

The primary purpose of this program would be to encourage and retain supermarkets, drug stores, variety stores, and other businesses along El Camino Real plus a limited number of other businesses that are now only allowed in service commercial zones, but which would serve the adjacent residential neighborhoods.

Program 6: Provide incentives for all new retail and office construction to provide some proportion of residential space on or near the same site.

This program is also included in the housing section of the



The recommended programs to reduce commercial and industrial development, prevent further construction of offices in multi-family residential zones, and require some residential space with new retail and office construction, could reduce the expected employment in 1990 by over 4500 persons.

Employment Forecast Adjusted by Adopted Programs				
	1970	1980	1990	Change 1970-90
University Avenue	7,100	8,500	9,300	2,200
California Avenue	2,600	3,300	3,700	1,100
Stanford Shopping Center	1,300	1,700	2,000	700
Stanford Professional Center	4,800	6,700	6,800	2,000
Stanford Industrial Park	20,400	30,000	31,500	11,100
San Antonio Area	7,950	12,000	12,500	4,550
Remainder of City	8,850	9,600	10,900	2,050
City of Palo Alto -Subtotal	53,000	71,800	76,700	23,700
Stanford University (unincorporated portion)	5,000	5,000	5,000	-0-
Palo Alto Planning Area-TOTAL	58,000	76,800	81,700	23,700

Plan. It will encourage more housing, allow more people to live in Palo Alto near their work, and add vitality to Palo Alto's commercial districts.

Impact of Programs on Employment Forecast

The programs that could do the most to reduce employment increases are those that will reduce site coverage limits for non-residential development and limit new office building construction in multi-family zones.

Adjusting the maximum site coverage limits permitted in commercial and industrial zones to correspond to the average site coverage of existing development in these zones

could reduce the expected employment increase between 1977 and 1990 by approximately 3600 persons.

Limiting new office building construction in multi-family zones could reduce the employment potential between 1977 and 1990 by an additional 1200 employees.

It is estimated that the recommended policies and programs would reduce the 1990 Palo Alto employment forecast from 81,500 to 76,700.

Within the entire planning area, the 1990 forecast would change from 86,500 to 81,700.

The recommended programs would alter the expected employment increases for all of Palo Alto's major commercial and industrial districts.

4

Transportation

Objectives

Palo Alto recognizes the individual's right to travel in an efficient, safe, and reliable manner. Transportation needs cannot continue to be met primarily by the private automobile. A large portion of the population depends on other modes of transportation. Strong dependence on the automobile has resulted in increasing problems of traffic congestion, air pollution, and noise. Traffic filters through and disturbs residential neighborhoods in order to avoid overcrowded arterials. The Plan seeks to encourage alternatives to the single occupant automobile through incentives for programs initiated by employers.

Transportation objectives for Palo Alto are:

- Serve present and future transportation demands safely, efficiently, and reliably.
- Reduce growth of overall traffic.
- Reduce peak-hour traffic congestion.
- Serve the transit-dependent population.
- Reduce dependence on and improve the efficient use of the automobile.
- Protect residential neighborhoods from through traffic.

Existing Conditions and Trends

Transit

Traditionally, transit is the use of buses and rail transportation.

Until 1976, Menlo Park provided limited bus service in the Palo Alto area to the Stanford University Medical Center and Stanford Shopping Center. The San Mateo County Transit District assumed responsibility for such service and expanded it.

The Santa Clara County Transit District provides basic bus service for Palo Alto. SCTD's fixed-route bus service increased transit ridership in Palo Alto from 1600 daily in 1972 to 4900 in August, 1975. The overall system design may be termed a "radial" or "hub and spoke" design, with all the routes passing through the University Avenue Southern Pacific Railroad station. The fare in 1976 remained at 25 cents, with discounts for the young, elderly, and blind.

The Santa Clara County Transit District has set a goal of attracting 30 per cent of all trips in the County to transit.

The ability of a proposed fixed rail system to achieve this ridership would depend on a short-trip collection and distribution system that would carry passengers to and from the rail network. In San Francisco, the most transit-oriented city in the west, the Municipal Railway carries only 20 per cent of all trips.

Special transportation for all handicapped persons over 18 years of age is provided by the City through Project Mobility, a program of subsidizing taxi fares.

Trafficways

The streets in Palo Alto have been classified into four categories based on their main function:

Freeway/Expressway—devoted exclusively to traffic movement.

Arterial—mainly serves through traffic; takes traffic to



Streets can be classified according to their function as traffic carriers. Freeways and expressways are devoted to the task of traffic movement. Arterial streets are designed to serve through traffic, but also provide access to adjacent properties. Collector streets carry traffic within an area to arterials and provide access to adjacent properties. Local streets, which are not shown on the map, provide parking and access to adjacent properties.

and from expressways, and provides access to adjacent properties.

Collector Street—carries traffic within an area to arterials and provides access to adjacent properties.

Local Street—provides access to adjacent properties only.

City street traffic has increased steadily over the years. If the current trend continues, and no major street improvements are made, volumes in 1990 will be as shown on the Projected Traffic Volumes Map. This map also shows the estimated traffic volumes if SCCTD is successful in attracting 30 per cent of all 1990 trips to transit.

Parking

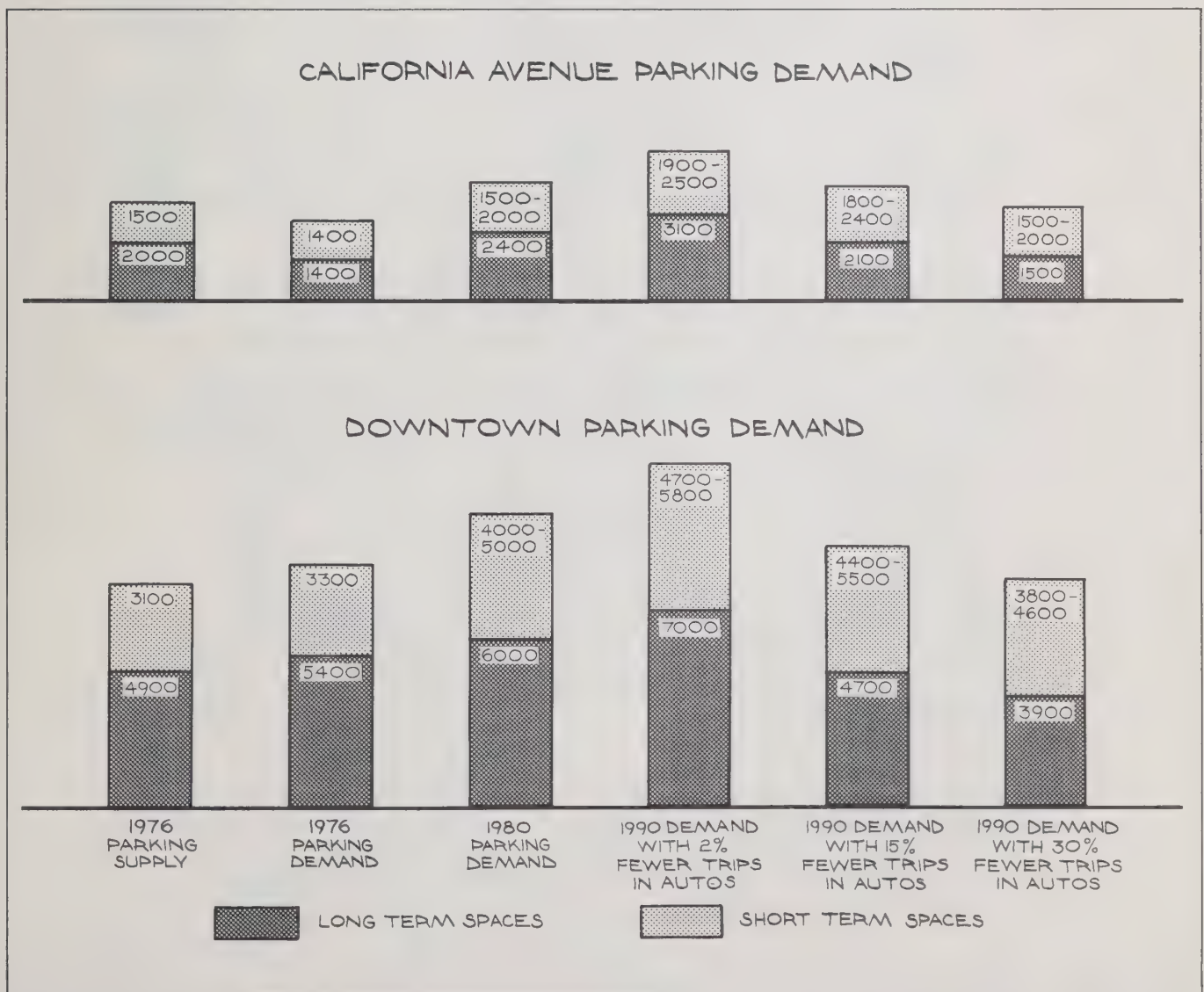
Demand for parking in the Downtown and California Avenue retail and office areas consists of short-term shopper parking and long-term employee parking. Parking is

more critical Downtown where many cars now park on adjacent residential streets.

If most people go on riding to work in single-occupant cars, the Downtown 1990 deficiency of parking spaces will reach 3900 to 5000 assuming present employment trends. If Santa Clara County's transit goal were achieved, the parking spaces now in existence could take care of the 1990 demand by reallocating some of the present employee spaces to shopper use.

A similar situation will exist in the California Avenue area. About 300 spaces are needed now, but if employment trends and vehicle use patterns remain the same a deficiency of between 1550 and 2150 spaces will result by 1990. However, 30 per cent of all trips on mass transit would make the current spaces adequate for the 1990 demand.

An innovative approach to the parking problem within a portion of the planning area was Stanford University's intro-



If fewer people drove single-occupant cars to work, the need for additional parking areas in the Downtown and California Avenue business districts would be significantly reduced.

1990 Projected Traffic Volumes

(Average Daily Traffic)

	1990 2% Transit	1990 30% Transit	% Change		1990 2% Transit	1990 30% Transit	% Change
1. Bayshore South of Oregon	108000	94000	-13%	12. Alma North of Embarcadero	24000	17000	-29%
2. Channing East of Newell	4000	2000	-50%	13. Alma South of Oregon	27000	22000	-19%
3. Newell North of Embarcadero	8000	4000	-50%	14. El Camino Real South of Embarcadero	32000	24000	-25%
4. Louis South of Oregon	4000	3000	-25%	15. Stanford West of El Camino Real	11000	10000	-9%
5. University West of Middlefield	21000	15000	-29%	16. Page Mill West of El Camino Real	42000	32000	-24%
6. Embarcadero West of Middlefield	30000	20000	-33%	17. El Camino Real South of Page Mill	37000	28000	-24%
7. Oregon West of Middlefield	32000	19000	-41%	18. Arastradero West of El Camino Real	21000	14000	-33%
8. Middlefield South of Oregon	13000	5000	-62%	19. Willow West of Pasteur	20000	17000	-15%
9. East Meadow West of Middlefield	6000	3000	-50%	20. Foothill South of Hillview	24000	18000	-25%
10. East Charleston West of Middlefield	13000	10000	-23%	21. Junipero Serra South of Page Mill	71000	47000	-34%
11. San Antonio West of Middlefield	32000	19000	-41%				



Projected 1990 average weekday traffic volumes have been calculated with both the current low level of transit ridership and with 30 per cent of all trips on transit, the goal set by the Santa Clara County Transit District for 1990.

Transportation Needs, Policies, and Programs

Transit

Policy 1: *Improve mass transit.*

Policy 2: *Increase transit ridership.*

Improved transit service is needed for several reasons. A significant segment of Palo Alto's population has very limited alternatives to transit. This group consists primarily of the young, elderly, poor, and disabled. It is estimated that in 1970, Palo Alto had approximately 6000 people between the ages of 10 and 15; 5750 people age 65 or over; 3750 people with income below federal poverty levels; and 3700 handicapped individuals. While these groups overlap to some extent, it is evident that many people need im-

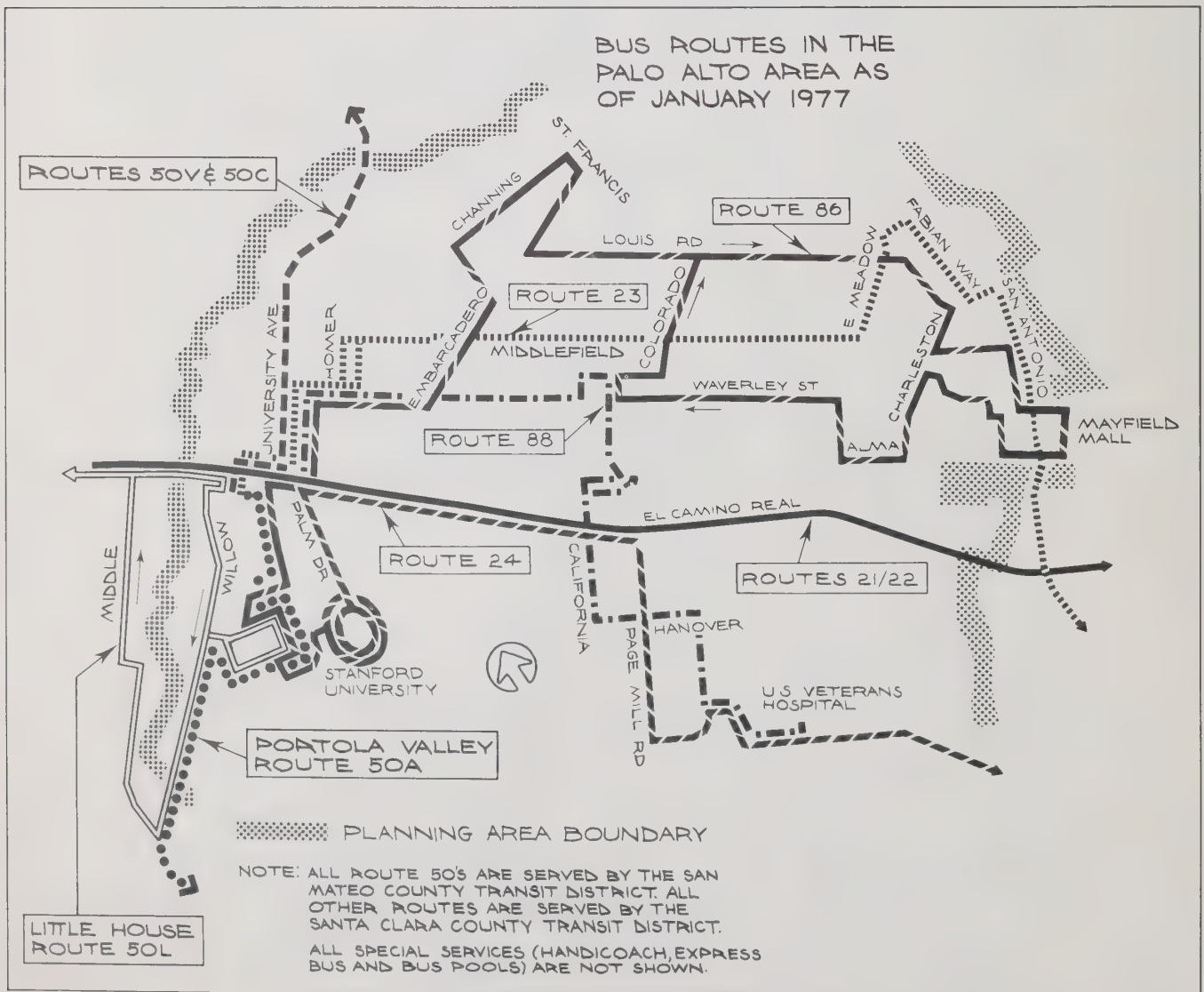
proved transit service.

Other people now depend solely on their private cars for transportation. With improved transit those who now depend solely on private cars may have a choice.

Policy 3: *Coordinate transportation planning including public and private roadways, transit, and para-transit.*

The projected traffic volumes for 1990 will cause serious problems of congestion on present streets, as well as pollution and intrusion of through traffic in residential neighborhoods. Better coordination of the overall transportation planning is important to reduce the number of cars causing environmental damage.

Para-transit involves efforts to move groups of people without using traditional transit facilities such as trains and buses. Examples of para-transit are chartered commute buses or bus pools, car pools, and van pools discussed in the



Santa Clara County bus routes in the Palo Alto area radiate from the Southern Pacific station near El Camino and University Avenue. Eighteen buses serve these routes during the morning and evening peak hours. Route 50 and the Little House Route are the responsibility of San Mateo County. This system is characterized by areas with overlapping service, areas with no service, difficulties in making transfers, and long intervals between scheduled pick up times. To alleviate these problems, the Plan proposes more bus service in a grid pattern.

trafficways portion of this section of the Plan.

Programs to carry out the three transit policies should include providing more and better service and more information about it through SCCTD. Specific programs include:

Program 1: Improve service frequency on bus and rail routes when demand warrants.

Program 2: Institute a compatible fare and transfer arrangement for the use of all public transit systems (BART, Muni, SCCTD, San Mateo Transit.)

Program 3: Decrease waiting times at transfer points when demand warrants.

As a result of the 1975 Palo Alto-Menlo Park Area Transportation Project (PAMTRANS), the present bus system will be modified from a radial to a grid system for better area coverage and flexibility. For SCCTD to implement the grid system would require more buses than now serve Palo Alto. To improve further the efficiency and reliability

of the bus system, the Transit District should explore the possibility of reserving one or more exclusive bus lanes on some roadways. Specific programs include:

Program 5: Implement the grid bus system.

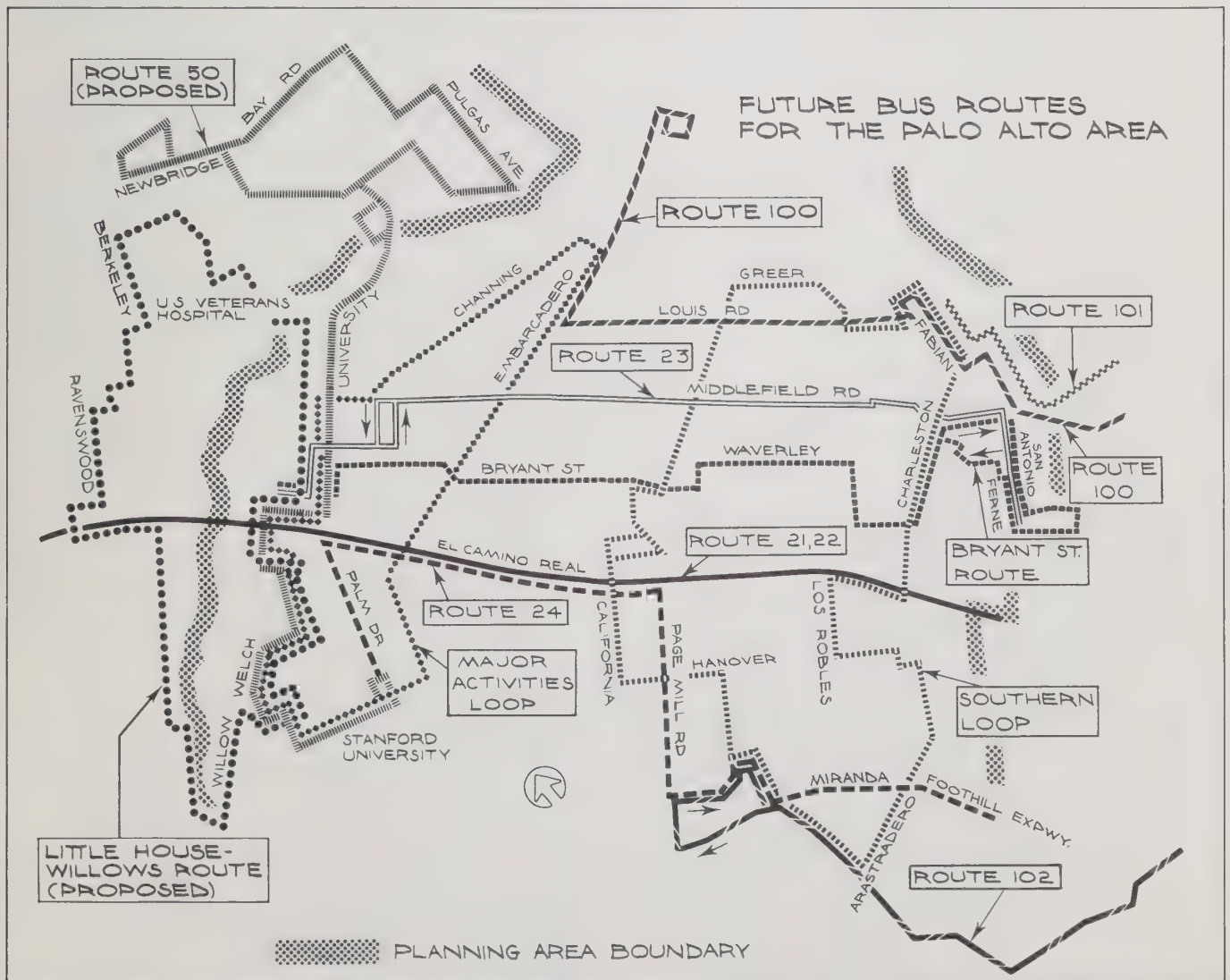
Program 6: Provide exclusive bus lanes.

Upgrading of existing County transit service will not be sufficient to meet all transportation needs. Three programs deal with the additional service needed.

Program 7: Establish a locally higher level of transit service.

Program 8: Provide special transportation services for needy senior citizens and handicapped persons.

Supplemental transportation services such as the current Project Mobility taxi program should be provided for needy senior citizens and needy handicapped persons who are not able to use the existing bus system.



The proposed bus system for Palo Alto, adopted by SCCTD based on the Palo Alto-Menlo Park Transportation Project will provide better area coverage and flexibility for the users. The improved bus service would require 34 buses rather than the 18 that Santa Clara County now operates in the Palo Alto area during peak hours.

Program 9: Provide shuttle service between activity centers. The special travel demand between activity centers like Downtown and the Stanford Shopping Center and to and from large employment areas during lunch hours can best be served by a shuttle bus service. Such a service would help some of the parking and traffic circulation problems at these centers today.

Program 10: Support a regional transit link (BART extension or upgraded SP commute service with direct BART connection) between San Francisco and San Jose.

Program 11: Improve subregional transit service (for example through the Santa Clara County Transit District by providing connecting service to BART).

Program 12: Establish express lanes for buses on freeways and expressways, where such lanes will help public and private transportation.

Improving transit service and increasing the number of people using transit involves not only transit service within Palo Alto and adjacent areas, but also service between the mid-peninsula and other parts of the San Francisco-San Jose-Oakland area. Faster and more efficient regional connections could include improved access to BART or upgraded Southern Pacific commute service. Adequate evaluation, including a cost-benefit analysis, and approval by the electorate should come before either alternative is approved. Provisions for express bus lanes that would bypass congested automobile traffic would also improve

regional service.

Program 13: Establish an MTC committee to coordinate transportation planning in the Palo Alto-Menlo Park area.

The involvement of the Metropolitan Transportation Commission (MTC), the Santa Clara County Transit District, and the San Mateo County Transit District is needed to provide more and better subregional and regional transit service to people who live or work in Palo Alto and Menlo Park.

Trafficways

The strong dependence on the private automobile for travelling to work has resulted in heavy traffic congestion on Palo Alto streets, especially during peak hours. Traffic filters through and disturbs residential neighborhoods to avoid the congested arterials.

Palo Alto is determined to reduce traffic congestion, but not by widening the streets to increase their capacities.

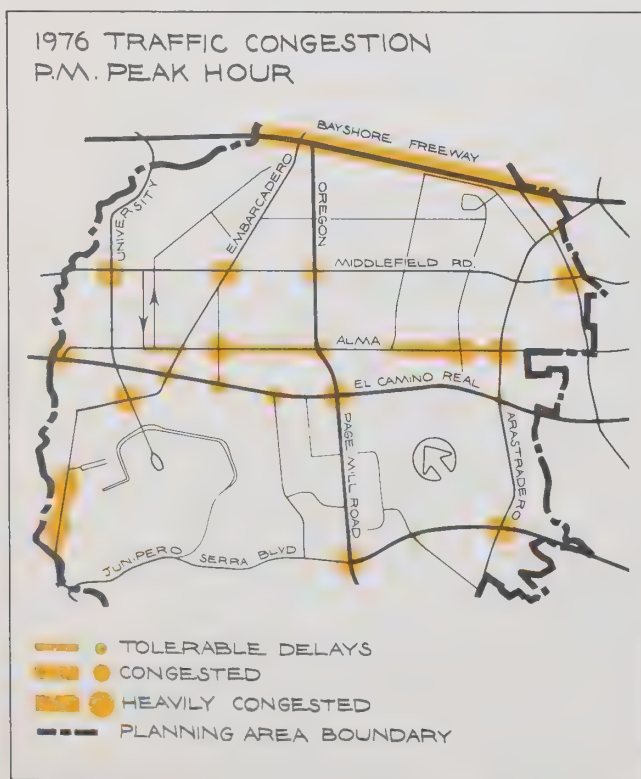
Policy 4: Avoid major increases in automobile traffic capacities.

Policy 5: Discourage travel at peak hours.

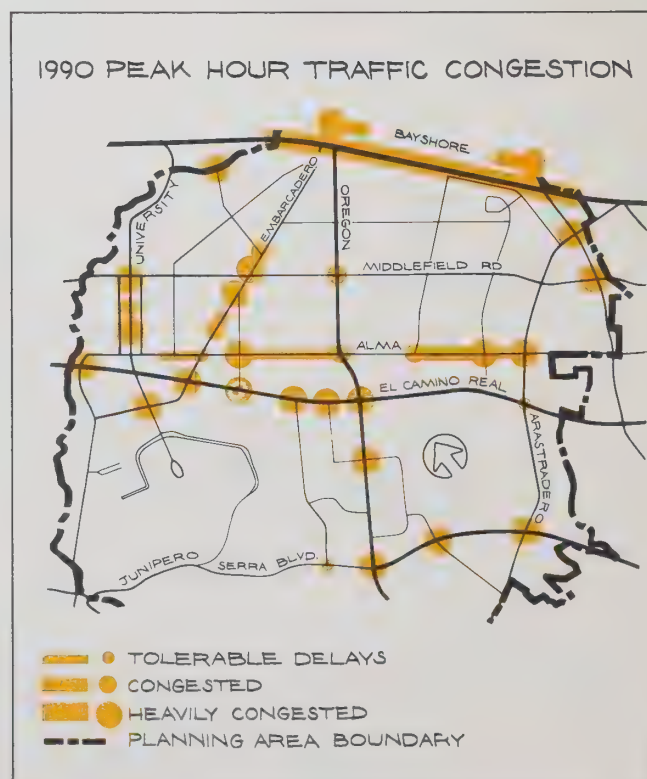
Policy 6: Increase the number of persons carried per vehicle.

Policy 7: Discourage auto use.

If nothing were done to change the current trend in automobile use, the traffic congestion in 1990 would become



This map indicates areas that are congested between 5 and 6 p.m., the most congested hour of the day. A congestion map for the morning peak hour would be very much the same.



Projected 1990 peak hour congestion assumes the current low level of transit service and no increase in trafficways capacities except for extension of Willow Road to El Camino Real.

intolerable. Supporting transit is not enough to solve this problem because transit cannot match auto speed and convenience for most types of trips. Palo Alto's policies and programs include ways to discourage auto use, especially during peak hours.

For example, Palo Alto opposes certain street improvements that have been proposed by the state and county because of its policy of avoiding street capacity increases and discouraging auto use. This policy does not exclude minor improvements to ease traffic flow.

Program 14: Oppose Dumbarton Bridge replacement and the routing of its approach roads to Palo Alto.

Despite continuing opposition, the Dumbarton Bridge replacement has been approved by the Bay Area Metropolitan Transportation Commission, and a bill that would seem to specifically clear its construction was signed into law in October, 1976. A new bridge would improve access to and from southern Alameda County, and increase traffic on University Avenue, Embarcadero, and Oregon Expressway.

Program 15: Delete the Page Mill/Foothill interchange from Palo Alto's General Plan.

An interchange at Page Mill and the Foothill Expressway would relieve congestion, but would not result in an advantageous change in traffic patterns. It is opposed on the basis of unnecessary costs, aesthetics, and impact on the immediate environment.

Program 16: Oppose the concept of a four-lane Page Mill Road to Skyline Boulevard.

Page Mill Road is designated as a Scenic Route. Adding four lanes from Interstate 280 to Skyline would eliminate many of its scenic qualities. Such a change would also be inconsistent with Palo Alto's adopted open space policies.

Program 17: Make only minor operational improvements to ease traffic flow on major streets.

Two major widenings and capacity increases are acceptable because they resolve particularly aggravated conditions:

Program 18: A four-lane Willow Road has been approved between Santa Cruz Avenue in Menlo Park and Arboretum Road, with an extension to El Camino Real.

Program 19: A Page Mill/El Camino interchange is needed to relieve the City's most congested intersection and to reduce traffic in the College Terrace neighborhood and on Churchill Avenue and on Arastradero Road.

The benefits of these two improvements in reducing congestion and pollution as well as lessening diversion of through traffic to residential neighborhoods are considered to outweigh the cost and the probable increase in traffic on those routes. Until funds are available for the Page Mill-El Camino interchange, the approved redesigned intersection should be built to ease the flow of traffic.

Program 20: If Bayshore Freeway is widened, join with adjacent communities in supporting the reservation of two lanes for transit.

Widening of Bayshore Freeway (Highway 101) to eight lanes would shift some traffic from Foothill Expressway and Junipero Serra Freeway (Interstate 280), possibly increasing traffic on crosstown streets. Failure to widen Bayshore is likely to cause harm by forcing local traffic to use parallel routes such as Newell Road and sub-regional traffic to use the Bayshore frontage roads, El Camino Real, Alma Street, and Middlefield Road. The State announced in March, 1975 that it has abandoned the widening of the freeway from six to eight lanes in southern San Mateo County, so it appears that freeway widening in Palo Alto is not likely before 1990.

Program 21: Promote flexible work scheduling.

In most parts of the City the traffic congestion problems are limited to a few hours of the day. Most of these peak hour trips are work trips. By encouraging employers to adopt flexible work scheduling, more people could choose to avoid traveling during peak hours and reduce some of the worst congestion.

Program 22: Promote car pools.

Program 23: Promote van pools.

Program 24: Promote bus pools.

Program 25: Provide free parking for car pools and van pools.

Perhaps the best payoff in congestion relief could be obtained by encouraging formation of car pools, van pools, and bus pools. These forms of transportation provide a specialized service that is better than buses, can operate without public subsidy, and cost riders relatively little.

Both the City and the employers should encourage workers to join pools. The employer would benefit from the decreased demand on parking; the community would benefit from congestion relief. To encourage matching of riders, names and addresses of workers who live close together could be provided by the employer. The vans and buses could be purchased by the employees, employer, or the City. Providing preferential parking spaces and free or reduced-fee parking in public and private lots could further encourage formation of pools.

The use of numerous alternatives to the single occupant automobile is important in reducing peak hour congestion. Employers and employees should pursue new approaches in addition to regular transit services, bus, van, and car pools; and flexible working hours.

Employers should be given incentives to initiate these new approaches and to reduce the use of automobiles and the amount of needed parking. These could include substitution of landscaping for required parking.

Policy 8: Support state and federal legislation to reduce motor vehicle emissions, noise, and fuel consumption.

The automobile is expected to remain the primary means of travel, but much can be done by state and federal government to increase the efficient use of automobiles by reducing harmful emissions and noise and decreasing fuel consumption.

Policy 9: Minimize need for additional long-term parking facilities.

The projected parking demands in 1990 show that construction of new parking facilities in the Downtown and California Avenue business districts may become necessary. However, new parking facilities should be avoided whenever possible by pursuing the policies and programs designed to discourage auto use. The following programs will insure that the parking needs of the community are met with the minimum amount of paving and minimum disruption to adjacent residential areas:

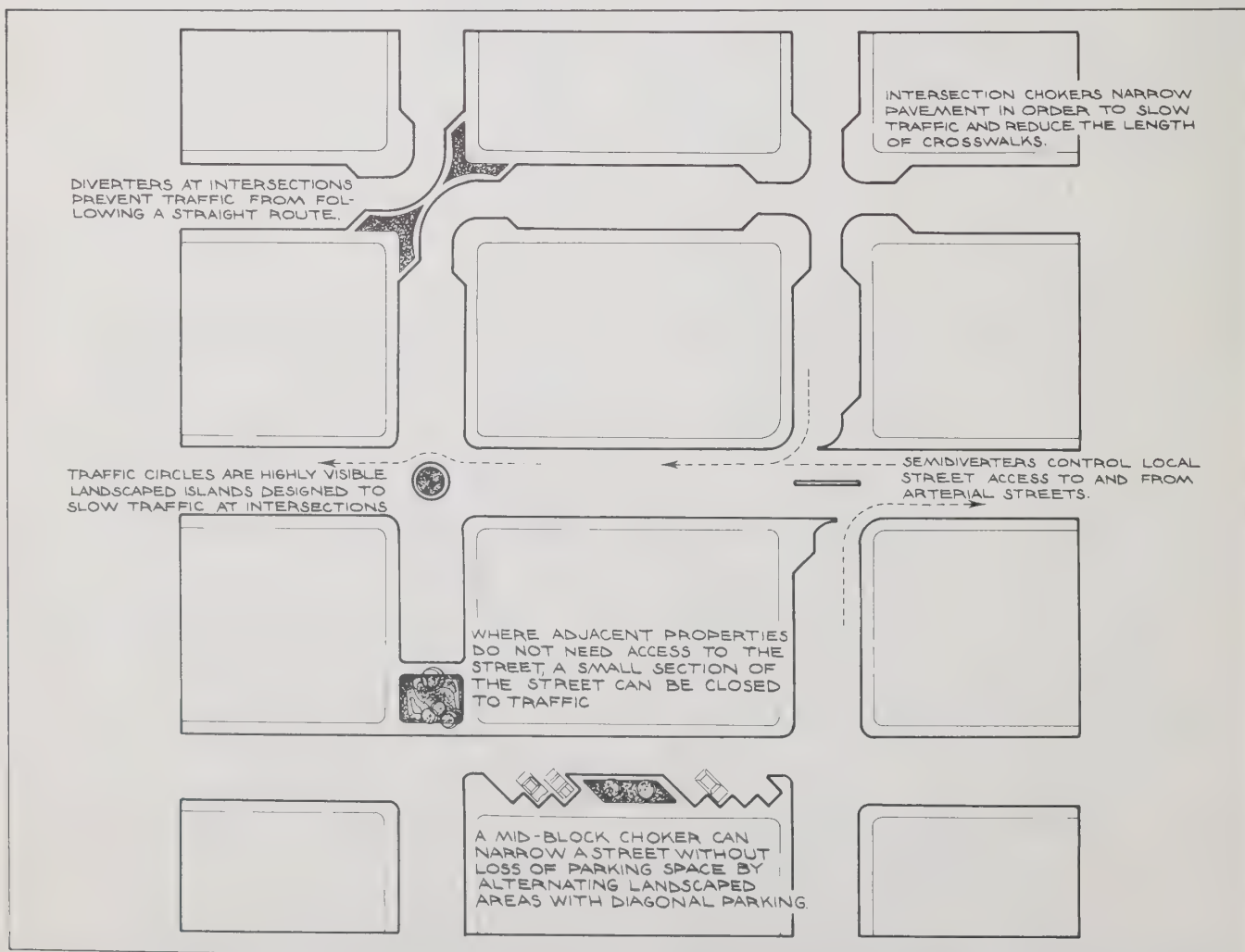
Program 26: Modify the Zoning Ordinance to provide compact car spaces.

Program 27: Modify the Zoning Ordinance to permit administrative approval to defer required parking spaces with the land to be held in landscaped reserve until such time as the spaces are determined to be needed.

The Palo Alto Zoning Ordinance requires a specific number of parking spaces for various land uses but does not allow compact car spaces to be counted toward the required total. This often encourages extensive standard size parking areas and reduces potential landscaped area. This zoning philosophy should be modified to permit compact spaces, and discourage excessive pavement.

Program 28: The City should assist in the planning and development of short-term parking.

Future City emphasis in assessment districts should be on providing more short-term shopper parking rather than additional long-term employee parking. Short-term parking for shoppers is important for business districts. Shopping



Six methods of discouraging use of neighborhood streets by through traffic are diverters, intersection chokers, traffic circles, semi-diverters, closure, and mid-block chokers. Appropriately placed stop signs are also effective.



Wide streets can be narrowed at intersections and landscaped to provide sitting areas and visual amenity and control automobile speeds.

trips are the most difficult to attract to transit and the most likely to go elsewhere if parking is difficult. Additional long-term employee parking should be provided by the private sector as needed. Provision of the additional short- and long-term parking should, in selected locations, be below ground or in multi-story parking facilities so as not to replace commercial and residential uses with extensive surface parking.

Program 29: The City should regulate parking on streets in and next to business districts.

On-street parking in business districts should be devoted primarily to short-term shopper use rather than to long-term parking which discourages customers. Adjacent to business districts, extensive long-term on-street daytime parking adversely affects the residential areas, and should be prevented through regulations.

Program 30: Make better use of existing parking lots by re-striping for compact cars.

Existing parking lots could be re-striping with some smaller spaces for compact cars to increase the number of spaces.

Program 31: Reserve close-in public parking for short-term use.

In the public parking lot system, short-term spaces should be located closest to the shopping areas while long-term parking should get the least desirable spaces.

Program 32: Discourage through-traffic from traversing residential neighborhoods.

Program 33: Explore an alternative road system for industries fronting on California Avenue.

It is not expected that programs to discourage automobile use will keep all traffic from filtering through residential neighborhoods. For many years it has been the policy of the City Council to use stop signs for this purpose. This has been generally successful, but with some problems. Alternative methods including street closures have already been tried in the College Terrace neighborhood, and an alternative road system for the adjacent California Avenue industries is being explored in an effort to provide additional protection.

Bicycle Routes

Policy 10: *Promote bicycle use.*

Even though bike riding increased after the bicycle route system was installed, the most optimistic projections still do not see a major diversion of trips from automobiles to bicycles. However, the potential exists to increase significantly the number of bicycle trips.

Program 34: Complete the adopted Bikeways Master Plan.

Palo Alto is determined to complete the adopted Bikeways Master Plan, but realizes that additional steps must be taken. There are still problems of bicycle-automobile conflicts at intersections with bike lanes. On major streets where there is no space for a bike lane, notably Alma Street and Middlefield Road, cyclists were first required, then allowed, to use sidewalks. Commuter cyclists have found the sidewalks inconvenient, and the highest bicycle-car accident rate has been on these streets. Shifting bicycle lanes to nearby parallel streets is one solution, but many of the bicycle destinations are along the major streets, and cyclists are as reluctant as motorists to use indirect routes. Many of the neighborhood streets have frequent stop signs to discourage through traffic, and the unwillingness of commuter cyclists to stop to obey these signs creates a high accident risk.

Program 35: Develop and implement a network of through bicycle boulevards.

The solution recommended by the Palo Alto Bikeways Committee is the "bicycle boulevard"—a street on which bikes have precedence over cars. Mid-block or intersection barriers passable only to bikes and emergency vehicles would prevent cars from traveling more than one-half or one block on the street, and cross traffic would be controlled by stop signs where possible. People living along a bike boulevard would benefit from the greatly reduced automobile traffic, but some would be forced to use less direct automobile routes, and nearby streets would receive the diverted auto traffic.

The only way to determine whether a bike boulevard would attract enough use and whether it would be acceptable to a neighborhood would be to conduct a test using temporary barriers. Possible test locations include:

First Priority Programs

1. Adobe Creek Underpass under U.S. 101 (\$25,000)
2. Pedestrian Overpass between P.A. High School and Town and Country Shopping Center (\$42,000—\$60,000)
3. Bridge adjacent to SPRR bridge at Alma and El Camino Real (\$60,000—\$80,000)
4. Underpass between Loma Verde and Chestnut Street (\$42,000—\$80,000)
5. Ramp at San Antonio and Alma Interchange (\$50,000—\$65,000)

Second Priority Programs

6. Widen sidewalk and install ramps along Alma between California Avenue and Colorado Avenue (\$15,000—\$20,000)
7. Overpass over U.S. 101 at Fabian Way or Loma Verde Avenue (\$250,000—\$400,000)
8. Pedestrian overpass over SPRR tracks between Alma Street and California Avenue (\$175,000—\$200,000)

Third Priority Programs

9. Bike lane along Matadero Creek between Bryant and Middlefield (\$36,000—\$45,000)
10. Bike ramps and signing improvements at San Antonio Road over U.S. 101 (\$6,000—\$8,000)

PALO ALTO
BIKEWAYS

The existing and proposed bikeway system includes on-street and off-street bicycle facilities and bicycle bridges. In addition, the Plan recommends conducting a test to see if bike boulevards would be used enough to warrant becoming a permanent part of the bicycle system. Ten improvement projects were identified as part of a 1975 study of bicycle and pedestrian barriers. Cost estimates were made at 1975 prices.

Park Boulevard now has some of the characteristics of a bike boulevard and is used by cyclists to avoid El Camino and Alma.

Cowper would be a logical alternative to Middlefield.

Waverley has been proposed as a bike boulevard, but is needed for automobile and bus traffic.

Addison west of Guinda would be suitable. Homer and Channing could easily handle diverted traffic. To be fully effective the Addison bike boulevard would need costly underpasses at Alma, the SP tracts, and El Camino, which could be justified only after bike boulevards have proved successful.

Other potential bike boulevard routes are along California Avenue except through the business district, and along Chaucer-Hamilton-Greer-Louis-Montrose-Middlefield. Autos could not be diverted from the portions of Louis and Middlefield that would be part of the bike boulevard, but better marking of the bicycle lanes could be provided.

Program 36: Remove traffic control impediments and physical barriers to bicycle travel.

A recent study of bicycle and pedestrian facilities deficiencies identified 22 locations which represented some

kind of barrier for pedestrian or bicycle travel. Typical barriers were the railroad tracks, Bayshore freeway, interchanges, streets with high traffic volumes, and creeks. Removal of most of these barriers would require construction of bridges or underpasses, or installation of traffic signals. Ten high priority barriers and 1975 cost estimates for their removal are indicated on the Palo Alto Bikeways map.

Program 37: Provide and require facilities for storing and locking bicycles at business and employment centers, transfer points, and recreational facilities.

Because bicycles are easily stolen, adequate bicycle parking is crucial to the successful use of bikes for transportation. Many potential riders are discouraged from riding when adequate storage or locking facilities are not available at their destinations.

Palo Alto has developed a program to install bicycle racks and lockers throughout the City. Some have already been installed, but many more are needed. Private developers could be required to provide bicycle parking in the same way that automobile parking is required. Private developers could also provide bicycle parking in lieu of some parking stalls.

5

Schools and Parks

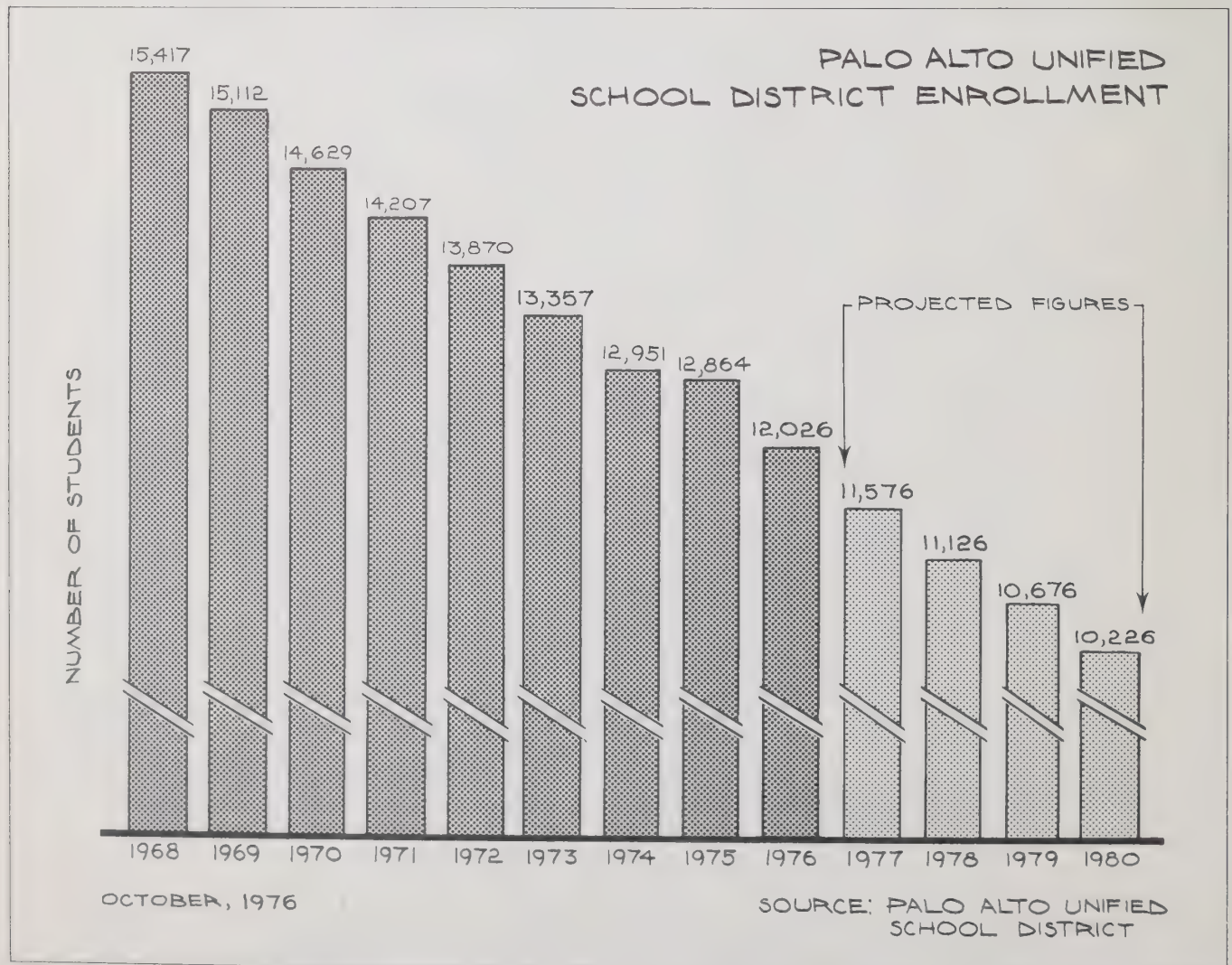
Schools

The Palo Alto Unified School District serves the Palo Alto planning area and a portion of Los Altos Hills. In the 1975-76 school year, the District operated 20 elementary schools, three middle schools, and three high schools. Three elementary schools, Fremont Hills in Los Altos Hills, and Ross Road and Ortega in Palo Alto, were closed after the 1975-76 school year.

The district is an independent entity that levies a property tax. The only legal connection between the district and the City is Palo Alto's Charter which provides for the election, membership, and term of office of the members of the Board of Education and for the appointment of the Superintendent of Schools.

The school district's buildings were constructed to handle a much larger number of students than is projected for 1980. Enrollment is likely to decline somewhat during the 1980s, although precise enrollment projections have not been developed. The decline will result from the trend toward smaller families and the probability of little major new residential development in the district. The district has indicated that an additional undetermined number of schools will have to be closed during the next 10 years.

All public school sites in Palo Alto are covered by the regulations of the Public Facilities District of the Palo Alto Zoning Ordinance which accommodates governmental, public utility, and educational facilities. Sale of these sites for activities other than by the government or for public education will require a change in zoning. The Palo



Declining school enrollments can be attributed to two major factors: declining family size and lack of significant expansion of family housing.

Alto City Council is responsible for granting a change in zoning. Alternatively, the district may continue to own the closed schools and lease them for community purposes or private educational uses when a use permit is granted by the City zoning administrator.

The 1976 and future school closings will have an immediate effect on residents with children in the school system and a general impact upon the City. The City must take a different approach to school closings than the district. The district is attempting to respond to enrollment and budget realities while assuring a quality educational program. The City must look at the effects upon services it currently offers at school sites, the potential uses of the sites of closed schools, and the possible effects on the neighborhoods.

The objective of the Schools section is that re-use of school sites should be compatible with the neighborhood and with the objectives and policies of the Comprehensive Plan.

Policy 1: *In considering new uses for closed school sites, priority should be given, where appropriate, to uses such as housing, parks, and community-type facilities, where such uses will increase, not decrease, the enjoyment of residents.*

Program 1: A joint City-school district process should be developed to decide re-use of specific closed school sites including appropriate environmental assessment and citizen participation.

A decision by the school district as to whether a site should be sold or leased is an important factor in evaluating potential uses. The district might want to keep some school sites for future educational use in the event school enrollment rises. For retained sites, the length of leases will be an important factor in determining the practical uses. The most practical and acceptable potential uses for closed school sites include housing, parks, and community-type facilities.

Use of school sites for housing will not overcrowd the remaining schools, given the declining enrollment of the district and the smaller families who would reside in the new housing.

Some school sites are key open space and recreation land for a neighborhood. If a site being considered for re-use is not close to a park, keeping at least some of the land for open space should be considered.

The City provides playground and team sport programs at most neighborhood schools during the entire year. Many of the playground programs require the use of the buildings at the school and would be impractical at closed school sites. In addition to playground activities, nearly all schools serve an important social identity function for their neighborhoods. The closing of school multi-purpose facilities will place more pressure on facilities such as the libraries, community centers, and the Cultural Center. These are now

nearing capacity use during afternoon and evening hours. Therefore, consideration should be given to providing some community-type facilities at closed school sites.

Parks

The following objective is based on the parks and recreation goal in Palo Alto's Open Space Element, which was adopted in 1972 and amended in 1973.

- Provide park facilities conveniently located and properly designed to serve the needs of all residents in the community.

Existing Facilities

City-owned park and recreational land totals approximately 3400 acres. Properties include mini-parks, neighborhood parks, district parks, and City-wide parks.

The 10 mini-parks range from one-half to two acres and serve their immediate neighbors. Palo Alto's eight neighborhood parks, ranging from three to five acres, also serve adjacent areas.

District parks serve major portions of the community. Twenty-acre Mitchell Park and 19-acre Rinconada Park are fully developed. In 1975, the City acquired 16 acres adjacent to the five-acre Greer Park to expand the existing neighborhood park into a district park.

City-wide parks include the 1800-acre Byxbee Park in the Baylands and the 1400-acre Foothills Park, as well as the Baylands Athletic Center, El Camino Park, and the Lawn Bowling Green. The 22-acre Esther Clark Park has been kept in a natural state and is not used for intensive recreation.

A 1969 Parks and Recreation Policy Study concluded that . . . "overall, Palo Alto [including Barron Park] has an adequate amount of acreage in park use. The deficiencies that do occur are matters of distribution . . .".

Park Policies and Programs

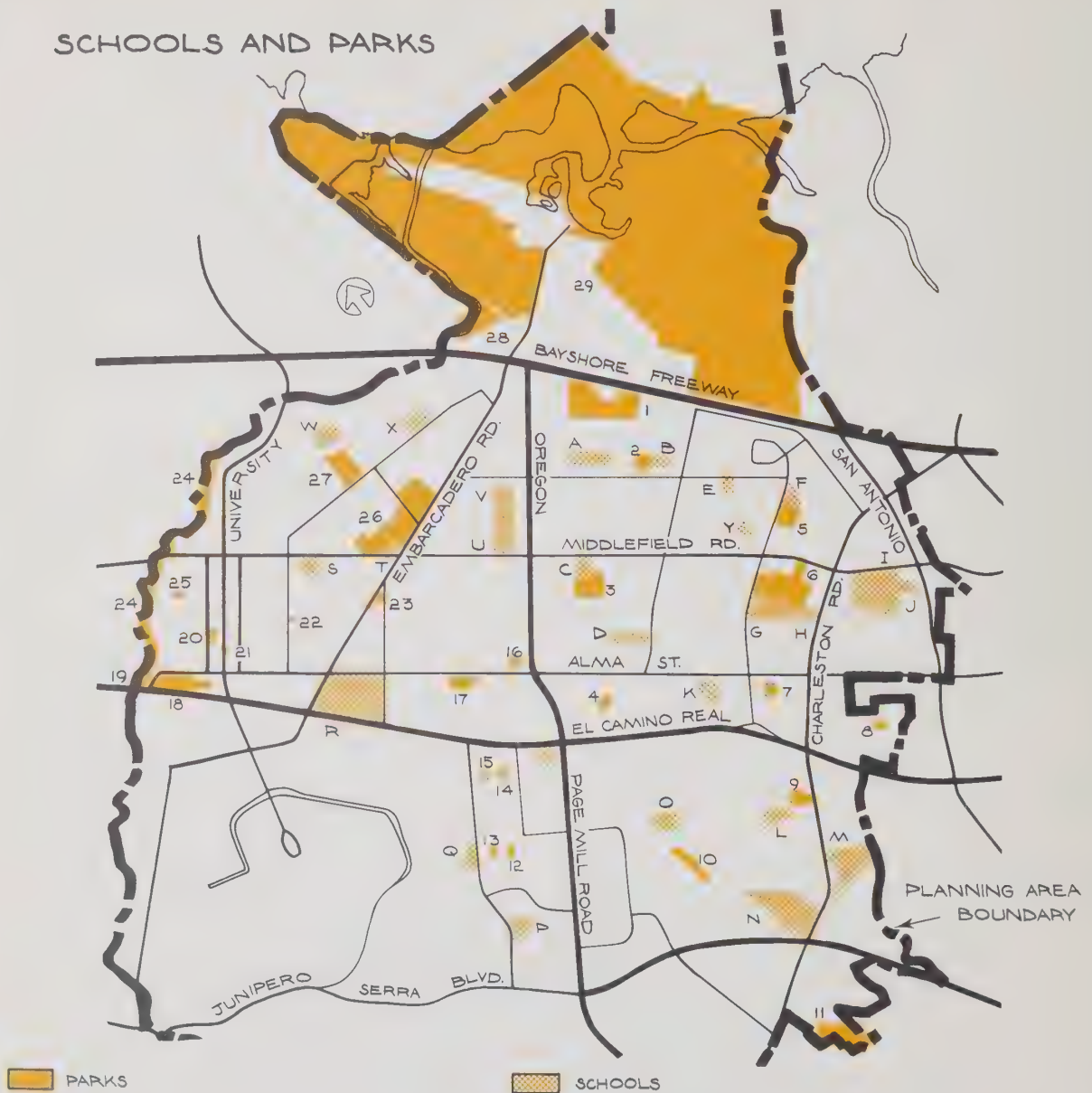
Policy 2: *Park facilities should be provided within walking distance for residents living within the urban portion of Palo Alto allowing for major physical barriers.*

Policy 3: *The City should provide park sites of different sizes and types to respond to the needs of a diverse population, including parklike natural areas, linear trails, and creekside systems.*

For most people, the walking distance to parks is one-half mile or less. Portions of Palo Alto developed since the late 1940s generally have park facilities within one-half mile of residential areas. However, in Palo Alto, as in most older communities, there are areas developed 40 to 50 years ago or longer which do not have adequately spaced parks.

In recent years, there has been an increasing recognition that park sites can include small areas such as Lytton Plaza and the Scott Street Mini-Park; long narrow linear areas such as Timothy Hopkins Park which is located along San

SCHOOLS AND PARKS



- | | | | |
|----------------------|-----------------------------|-----------------------------|-----------------------------|
| 1 Greer Park | 16 Bowden Park | A Van Auken School | M Terman Jr. High School |
| 2 Seale Park | 17 Peers Park | B De Anza School | N Gunn Sr. High School |
| 3 Hoover Park | 18 El Camino Park | C Hoover School | O Barron Park School |
| 4 Boulware Park | 19 El Palo Alto Park | D El Carmelo School | P Nixon School |
| 5 Ramos Park | 20 Cogswell Plaza | E Sequoyah School | Q Escondido School |
| 6 Mitchell Park | 21 Lytton Plaza | F Ortega School (closed) | R Palo Alto Sr. High School |
| 7 Robles Park | 22 Scott Park | G Wilbur Jr. High School | S Addison School |
| 8 Monroe Park | 23 Lawn Bowling Green | H Ohlones School | T Walter Hays School |
| 9 Briones Park | 24 Hopkins Park | I Cubberley Sr. High School | U Jordan Jr. High School |
| 10 Bol Park | 25 Downtown Park North | J Greendell School | V Garland School |
| 11 Esther Clark Park | 26 Rinconada Park | K Ventura School | W Crescent Park School |
| 12 Weisshaar Park | 27 Eleanor Park | L Loma Vista School | X Green Gables School |
| 13 Werry Park | 28 Baylands Athletic Center | | Y Ross Road School (closed) |
| 14 Mayfield Park | 29 Byxbee Park | | |
| 15 Cameron Park | | | |

The 1800-acre Byxbee Park in the Baylands including extensive natural areas and the Baylands Interpretive Center, as well as the Golf Course, Yacht Harbor, and Refuse Disposal Area. The 1400-acre Foothills Parks, which includes the Foothills Interpretive Center, is not shown on this map. School playgrounds often serve park functions.

Francisquito Creek from Emerson Street to Marlowe Street; and natural areas like those found in Foothills Park and the Baylands.

Program 2: Develop a second mini-park in the area south of the Downtown.

Program 3: Make permanent the mini-parks on the Downtown Park North site and move toward completion of a park for the entire block.

The 1969 Parks and Recreation study pointed out neighborhood park deficiencies in the Downtown area. To help correct these deficiencies, the City developed the Scott Street Mini-Park south of University Avenue. The development of a second mini-park is needed and purchase of the land should be pursued.

North of University Avenue, the block bounded by Everett, Waverley, Hawthorne, and Kipling has been purchased. The site has not yet been fully developed as a park because 11 low- and moderate-income dwelling units would have to be removed. Several vacant parcels on the block have been developed into mini-parks. These mini-parks should be made permanent through park dedication, and efforts should begin to move or demolish the existing houses and to complete a park on the entire block.

Program 4: Develop Greer Park in accordance with the approved Master Plan.

Program 5: As appropriate, acquire and develop on one or more sites district park facilities west of Alma.

Plans have been developed for the recently expanded Greer Park land and should be carried out as City funds become available.

The City conducted a survey in April, 1974, which evaluated Palo Alto's satisfaction with recreational services. The survey found that there is a need for more district park type facilities in the area west of Alma. Needed facilities could be located at several existing parks, and smaller sites could be purchased. It is not necessary to buy and develop a single 20-acre site to meet this need.

Program 6: Develop a system of trailways for bicyclists, pedestrians, joggers, and others utilizing existing parks and public right-of-way.

Recent increases in hiking, jogging, and bicycling have generated a need for special trails. These uses of existing park lands and street rights-of-way can be the basis for a trail system. In some cases, the City may have to acquire trail easements or purchase strips of land to complete a portion of a desired trail network. The Transportation section of the Plan contains information on bicycle routes including a map of existing and proposed bikeways.

Program 7: Utilize the creek area in Esther Clark Park for ecological studies.

Esther Clark Park has been kept in an undeveloped condition. The park's location in a residential area on the border of the City does not favor active recreation. The use

of this area for ecological studies, especially by Palo Alto Unified School District students, should be pursued. Special emphasis should be placed on the creek bed.

Program 8: Consider purchase of urban open spaces where unusual opportunities present themselves.

Program 9: Seek opportunities to add linear parks along creekbeds.

Program 10: Purchase new park sites where unusual opportunities present themselves.

It has recently become more widely accepted that a park system can and should include more than traditional neighborhood, district, and city-wide parks. Increased use of mini-parks and the acquisition of urban open spaces are responses to this idea. An example of urban open space is Lytton Plaza, an important open area on University Avenue acquired in 1976. Another non-traditional park area is Hopkins Park along San Francisquito Creek. The City should continue to be receptive to purchasing similar park sites.

Policy 4: Make parks safer for users and less prone to vandalism.

Program 11: In the design and landscaping of parks, provide for maximum visibility from surrounding areas.

Program 12: Develop park activities to extend the time of use.

Program 13: Encourage foot and bike traffic in parks at all hours.

Responses to an April, 1974, survey indicated that most Palo Altans feel safe in their parks. However, a "fair to poor" safety reaction to district parks was registered by 14 per cent, and 20 per cent reacted the same way to neighborhood parks.

The design, landscaping, and use patterns of parks can help make them safer. It is important to make parks visible from surrounding areas through design and landscaping. Even if the park design is acceptable, the landscaping can create screened areas and corridors. It is believed that residents will feel safer as more people, including hikers and bicyclists, use the parks.

Policy 5: Maintain close cooperation between City and school authorities in planning, acquiring, developing, operating, and utilizing park and recreation facilities.

Program 14: Evaluate potential park uses for closed school sites.

School sites serve both neighborhood and district park functions. The 1969 Parks and Recreation Policy Study counted junior or senior high school playfields as district parks. Not all areas are equally served by both district park and school facilities. Closed school sites should be analyzed to see how they function as parks and recreation areas and to find out what effect school closing has on neighborhood and district parks.

6 Urban Design

Urban design is concerned with how the city looks and feels, with the sensory relationship between people and their environment, their feeling of time and place, and their sense of well-being.

In Palo Alto elements of urban design range from the backdrop of the hills and the foreground of the Bay, to large man-made features, such as the freeways, and small ones such as planting strips between sidewalks and curbs. Most of the major visual elements are fixed, and there is little opportunity to make decisions that affect the urban design character of a large segment of Palo Alto. Still, if these decisions are to be made wisely, Palo Altans must remain keenly aware of the City's urban design character and what, if anything, threatens this character.

Objectives

The Comprehensive Plan's urban design policies and programs fall under three broad objectives.

- Preserve Palo Alto as a creative environment where people can live and work.
- Identify and maintain the smaller scale visual features that give character to Palo Alto and its neighborhoods.

Changes in the scale of the community that might occur through introduction of massive land uses such as large buildings or new transportation corridors should be carefully evaluated.

- Retain the uniqueness and diversity of Palo Alto's neighborhoods.

Results must be considered when design decisions are made. Will the decision strengthen the special character of the neighborhood or cause it to lose its separate identity?

Scale and Form

Scale is relative and subjective and many of Palo Alto's most heated debates in the past have been on this question. Voter rejection of the Downtown "superblock" office project in 1971 and the Downtown hospital proposal in 1968 was largely based on the "overwhelming" argument.

Policy 1: *Maintain the present scale of the City, but modify those elements which by their massiveness are overwhelming and unacceptable.*

Program 1: Discourage massive single uses through lim-



Among major features of Palo Alto's urban design character are the University Avenue business area and the foothills, which provide a backdrop for the community.



The Plan recommends revising the zoning to prevent widespread demolition of single family houses and construction of large apartment buildings in the area north of Downtown to preserve the existing scale of this neighborhood.

itations on height and density to protect surrounding uses and community values.

In response to the expressed views of Palo Altans, the Plan avoids bigness and advocates maintaining the present scale of the City. There is no reason why the scale must always increase. The zoning will have to be revised in some areas to avoid scale changes. It should be revised between Downtown and San Francisquito Creek where present regulations are designed to encourage combining several parcels and constructing large apartment buildings.

At some locations abrupt changes of scale cause one land use to overwhelm another. Where Stanford Industrial Park adjoins College Terrace, for example, the visual shock is lessened by generous landscaping and limiting the apparent size of buildings and parking lots near the boundary. Parking lots and parking structures probably are the most pervasive threat to existing scale throughout the City. The efficiency of large parking facilities that are fully visible from the street must be sacrificed in favor of smaller parking areas that create less visual impact. This would meet urban design objectives.

Massive land uses also can become barriers that do more than define areas of the City. Undesirable barriers block physical access and can adversely affect nearby areas. The most notable examples are Alma Street and the Southern Pacific Railroad tracks.

Program 2: Develop visual design standards for new development and a program for abating existing developments or design features that do not conform.

Program 3: Eliminate garish or degrading signs.

Program 4: Restore and maintain residential uses in older sections of Palo Alto.

The scale and character of many neighborhoods depends on the success of Program 4, as does the preservation of the City's older and therefore less costly housing for those who would otherwise be priced out of Palo Alto.

Historic Preservation

Policy 2: Encourage private preservation of buildings which have historic and/or architectural merit.

Palo Alto's cultural heritage has been preserved in many buildings dating from the establishment of University Avenue in 1885 and the subsequent settlement of the City. The shops at 530-536 Ramona Street south of University Avenue are examples of commercial buildings worthy of preservation. Many well-designed old homes that should be preserved are located in the vicinity of Lincoln, Kingsley, Ramona, and Waverley Streets. This area, known as Professorville, is a California registered point of historical interest. The Mayfield area focusing on California Avenue and El Camino Real was settled in the 1850s but the oldest remaining structures in the area date from the 1890s. The

Squire House at 900 University Avenue is an official National and State Historical Landmark, the Downing House at 706 Cowper Street is an official National Historical Landmark, and the Lee de Forest House at 913 Emerson Street is an official State Historical Landmark. A number of other buildings and locations have been listed in the County Heritage Inventory. The criteria used in designating buildings as State and National Landmarks can be used for determining which buildings are eligible for Programs 5 through 9.

Program 5: Develop incentives for the retention and rehabilitation of houses with architectural or historic merit in all zones.

Often the cost and effort needed to maintain and upgrade an older structure places it at an economic disadvantage compared to new developments. Programs 6, 7, and 8 are incentives that can apply to some structures worthy of preservation. Additional incentives should be developed.

Program 6: Allow non-conforming use for buildings of architectural or historic merit for the life of the building.

In some situations, an historic building might be retained only if it can be used for an activity which would not normally be permitted under the zoning classification. In such instances, the City should consider procedures to allow non-conforming uses where they will not have a major detrimental effect on the neighborhood.

Program 7: Encourage and assist owners of buildings of architectural or historic merit in applying for tax relief under State programs.



The Professorville area near Lincoln, Kingsley, Ramona, and Waverley Streets is a California registered point of historical interest. The many large and well designed old homes in this area make Professorville a valuable part of Palo Alto's urban design character. Bernard Maybeck is believed to have designed this famous "sun-bonnet" house in 1899.

This involves a state program expected to begin in early 1977.

Program 8: Develop an alternative building code for historic houses.

Historic buildings should meet the safety standards of the Uniform Building Code, but the code often requires techniques that do not lend themselves to older buildings. The state's building code for historic houses, which would maintain the current safety standards but allow different building techniques, is expected to be issued in 1977.

Program 9: Encourage the rehabilitation of historic buildings by providing for the preservation of the building facade when it is not economically feasible to retain the whole building.

Palo Alto has used a facade easement to insure preservation of the exterior of the Squire House. Preservation of building facades can be accomplished by private owners as well as by the City.

Trafficways

It is primarily from the streets that any city is seen and its form perceived. With few exceptions, alignment, width, abutting development, or landscaping give each Palo Alto thoroughfare a separate character.

Policy 3: Promote visual continuity through tree planting, consistent use of low shrubs and ground cover, and removal of visually disruptive elements on major City streets.



Alma Street and the Southern Pacific Railroad tracks are major barriers that block physical access to portions of the community.

Program 10: Accelerate the program of placing utility lines underground.

Program 11: Encourage the use of planting and other treatment of the space between street and sidewalk other than unrelieved concrete paving.

Program 12: Extend street tree planting Citywide, including median strip trees wherever possible, with specific schedules for completing individual streets.

Program 13: Supplement the planting along Alma to screen the railroad right-of-way.

Policy 4: Find new uses for street spaces other than for automobiles.

Program 14: Create mini-parks, pedestrian malls, promenades, open space, and areas where pedestrians would have right-of-way over automobiles.

Non-automobile use of street space should be given greater emphasis. Palo Alto, like all cities, is seen mainly from its streets, so the width, the landscape character, the height and location of buildings relative to the street width, the pedestrian and bicycle uses, and the amount and speed of traffic are among the most important urban design elements the City can control. Auto dominance should not be assumed and in some locations bicycles or pedestrians should have right-of-way.

Business Districts

In addition to streets, business districts help to set Palo Alto's urban design character. Conflicts are evident between the demand for automobile space and the human desire for



Palo Alto's Baylands are a valuable scenic and natural resource. Within Palo Alto, most of the Baylands with open space potential are owned by the City and dedicated for park, conservation, and other open space purposes.

safe, pleasant, and short walking distances and visual enclosure. No amount of landscaping can fully overcome the proliferation of asphalt for street space, parking lots, and drive-ins. People, not cars, dominate virtually all of the world's great cities. Long-term urban design improvements will be closely linked to the success of transit and to making walking necessary and attractive.

Policy 5: *Encourage rehabilitation of aging retail areas to keep them economically healthy.*

Program 15: Seek innovative ways to apply the spirit of current codes and ordinances to older buildings. Assist and encourage developers in finding ways to restore these buildings to usefulness.

Program 16: Encourage recycling of buildings that are vacant or derelict or both.

Keeping Palo Alto's business areas healthy and attractive while retaining the present scale of these areas should involve efforts to make it easier to redevelop older structures and discourage retention of derelict and vacant buildings.

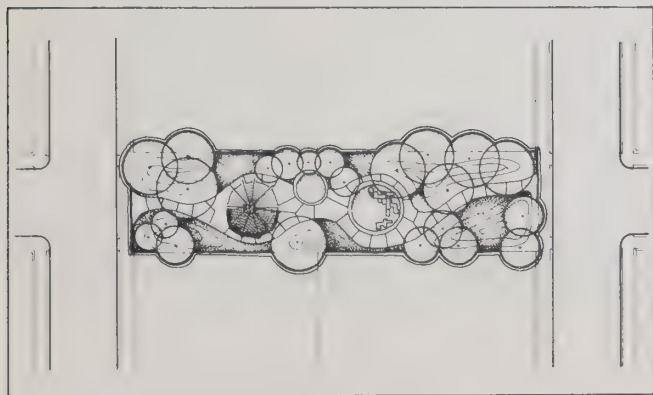
Program 17: Study the use of redevelopment laws to encourage the redevelopment of deteriorating non-residential areas.

In addition to encouraging rehabilitation of individual structures, those portions of Palo Alto's business areas which contain buildings and uses that may deteriorate physically or economically should be watched. If the private sector is unable to rejuvenate those areas, the use of state and federal laws to assist private redevelopment should be studied.

Improving the quality of Palo Alto's business districts will depend on setting standards for new development appropriate to each district and enacting regulations that gradually will bring existing development into conformity.

Policy 6: *Upgrade standards for El Camino Real, Midtown, and the Circle and Alma areas of Downtown.*

Program 18: Conduct detailed area studies for El Camino Real, Midtown, and the Circle area of Downtown.



On part of a street not needed for through traffic or access to abutting property, a mini-park can be built.

Program 19: Design studies for retail districts should consider allowing buildings to encroach on sidewalk areas where the visual character of the street would be improved and pedestrian space would not be unduly constricted.

Program 20: New zoning regulations should clarify commercial business district boundaries and restrict the amount of frontage that may be occupied by uses that do not contribute to retail vitality.

"Retail vitality" means the ability of business districts to maintain and expand their sales volume and profits. Older retail areas lose their vitality quickly when a number of sites become vacant or are occupied by vacant buildings, parking lots, stretches of blank walls, and drive-in businesses. All of these combine to discourage shoppers from walking to several stores before returning to their autos. The new zoning ordinance should encourage development that will keep Downtown and the California Avenue business district competitive and oriented to walkers and will encourage shoppers to walk along portions of El Camino.

Program 21: Explore the possibility for securing temporary landscaping on unused lots in business districts.

Program 22: Improve and supplement plantings on cross streets and streets parallel to University Avenue in the Downtown area.

El Camino Real

This street is criticized most often and presents the most challenging problem. From a clearly defined gateway where the Menlo Park commercial strips ends, the north half of Palo Alto's El Camino frontage generally unfolds free of clutter, and where it passes Stanford University and Palo Alto High School it becomes a green boulevard. This only heightens the contrast with Palo Alto's only commercial strip—El Camino from Stanford Avenue to the south boundary of the City. Much of the business there is not pedestrian oriented so competition for the motorist's attention has created visual chaos.



The El Camino Real commercial strip is marked by visual chaos.

El Camino will change only to the degree that the City takes positive actions and provides inducements to the private sector for change. Landscaped setbacks, much stronger controls of sign sizes, lighting, colors, and screening of parking will help make El Camino a more attractive part of Palo Alto. These controls should be applied on a schedule that will eliminate out-of-character development within a reasonable length of time.

More significant changes in the strip will probably be brought about by the land use changes proposed in this Plan. The City encourages neighborhood commercial use, rather than regional commercial use, for El Camino.

Downtown

Despite major shopping center competition during the last 20 years, Downtown has maintained its identity and urban character. New benches, planting, and lighting contribute toward an improved shopping environment on University Avenue. Parking areas are reasonably well-landscaped and well-located, usually only a half-block from the main shopping street. Despite a few instances of careless remodeling that occurred some years ago, the quality of old and new buildings generally is high, and the mixture evokes an emotional response that no shopping center or office park can. Reflecting the way Palo Altans feel about retaining the intimate scale and character of Downtown was the rejection in 1971 of the highrise "superblock" proposal.

The proposal in the housing and employment sections of the Plan that retail and office space provide some proportion of residential space on or near the same site will add interest and activity to the urban fabric.

Functional and visual problems include through traffic on University Avenue, many obsolescent buildings, and some inefficient mixtures of activities such as the banks and offices that break up retail frontage. Many activities such as prime retail stores are too far apart or isolated. They would

benefit if they were closer together. The walk from one store to another can be unacceptably long when one must past by blank walls, parking lots, offices or other "dead" uses. Continuous retail frontage should be fostered and maintained if the Downtown retail district is to retain its vitality.

Palo Alto's downtown is better defined than most. However, it can be hard for shoppers to orient themselves when they enter Downtown. Many streets are indistinguishable from one another, and it's difficult for motorists to decide where to park their cars and start walking.

Stanford Shopping Center

Stanford Shopping Center opened in 1955 and is faced with increasing competition from newer centers. A major improvement and expansion project is now underway. The possibility of adding housing on the initiative of the University could create an urban complex far superior to the existing islands in an asphalt sea. The overall land shortage in Palo Alto may be economic justification for parking structures.

Town and Country Shopping Center

Town and Country Shopping Center continues to lose the large oaks that contributed to its original charm. It needs new landscaping, particularly a low hedge along El Camino that would screen the asphalt, but leave stores visible.

California Avenue

California Avenue public parking and landscape improvements completed in 1963 have helped revive Palo Alto's most centrally-located business district. Back-of-the-store parking lots need substantial beautification, and there should be warmer pedestrian-level night lighting throughout the area. The entrance from El Camino needs strong identification that would make it easier for the first-time customer to find the business district.



The University Avenue shopping environment has been enhanced by new landscaping, sidewalk design, lighting, and street furniture.



Blank walls, unadorned parking lots, empty lots, and vacant buildings mar the recent beautification and belie the upsurge in retail activity Downtown. The Plan recommends encouraging uses that contribute to retail vitality and securing the temporary landscaping of unused lots.

Midtown

Midtown, Palo Alto's only recent multi-ownership shopping district, grew during the 1950s when the surrounding area was being developed with moderately priced homes. Comprehensive renovation would enhance its interaction with the surrounding neighborhood. New landscaping, combined, coordinated, and thoroughly revamped parking circulation; building remodeling; and more tasteful signs are all needed.

Office/Industrial Areas

Stanford Industrial Park is justly recognized for high-quality development. Architectural review requirements ensure that other industrial areas will improve as they meet the higher design standards set by the Architectural Review Board.

Gateways

Policy 7: Strengthen gateway identity.

Program 23: Plant groves of tall trees at Palo Alto's south gateway on El Camino Real.

Program 24: Preserve the wooded character at Palo Alto's north gateway on El Camino Real.

Program 25: Strengthen the gateway entrance from Bayshore Freeway onto Embarcadero Road, westbound.

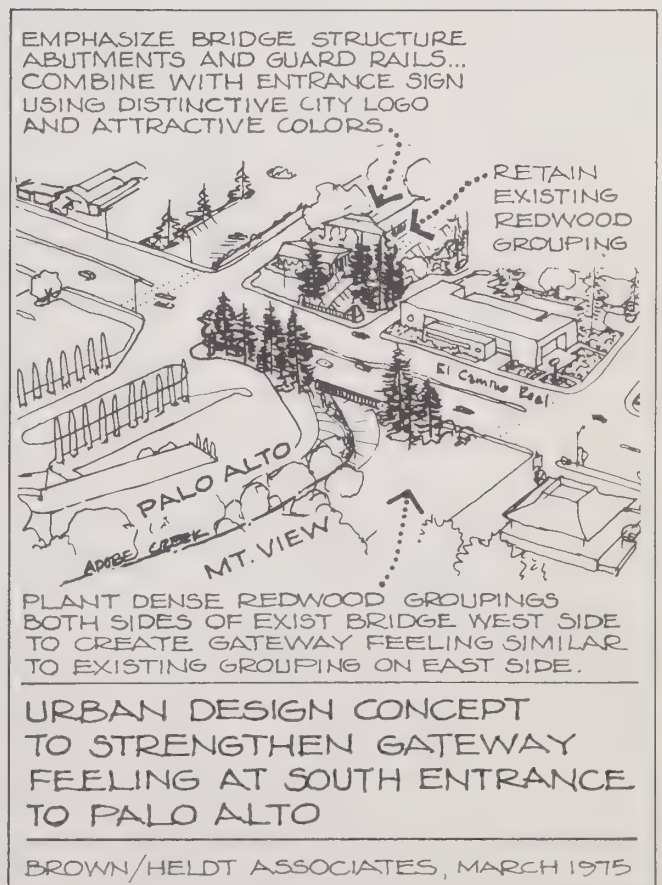
The sense of entering is an important contributor to community identity. The motorist enters Palo Alto through these types of gateways: crossing a creek bridge, using a freeway ramp, driving along an arterial street, or through the University Avenue-El Camino interchange. A detailed study of the Downtown Circle area should emphasize the gateway identity. There is an opportunity to enhance the gateway feeling by emphasizing bridge structures. A well-designed sign or symbol incorporating the "tall tree" should appear at all gateways.

Scenic Highways

Palo Alto highly values its beautiful streets. While most Palo Alto streets are not cited in this section of the Plan as having special scenic qualities, maintaining and upgrading the appearance of all streets continues to be a high priority as noted in Urban Design Policies 3 and 4 and Programs 10 through 14.



The Midtown shopping area needs a comprehensive renovation including a new parking and circulation system, additional landscaping, tasteful signs, and the remodeling of many buildings.



Groves of tall trees and emphasis on the Adobe Creek bridge would strengthen the gateway feeling at Palo Alto's south entrance on El Camino Real.

The objective of the Scenic Highway program is to:

- Protect and enhance roadways with special scenic qualities.

Three designations of scenic highways commonly used by other planning agencies are:

1. City roads with visual attractions that serve as routes through the City. These lead to recreational areas or link with scenic routes in other cities.
2. Rural routes with natural vegetation, scenic views or country landscape that lead to recreational areas and are suitable for pleasure travel.
3. Attractive state and county routes that pass through Palo Alto and conform to the scenic criteria of the state, counties, and adjoining cities.



These routes are or have the potential to be especially scenic. Skyline Boulevard has been designated a State scenic highway.

Scenic routes are selected if the existing or potential road is wide enough to be aesthetically pleasing or if there is or could be especially interesting landscaping or native vegetation along the roadside. It could be selected if the route has varied views of open space and scenic beauty and will safely accommodate motorists, hikers, bicyclists, or horseback riders. A scenic route should have stopping places along the way for rest and food, or for viewing historical sites or interesting structures.

Designated Scenic Routes

Skyline Boulevard is the only officially designated state scenic highway in Palo Alto. The City has established a 200-foot scenic corridor setback on its section of Skyline.

Arastradero Road between Page Mill Road and the western City limits has been proposed by Santa Clara County as a scenic highway. Arastradero leads to scenic Alpine Road in Portola Valley. Within Palo Alto, Arastradero Road in the lower foothills has had a 200-foot scenic corridor setback since 1972.

Santa Clara County has also proposed Page Mill Road between Foothill Expressway and Skyline Boulevard as a scenic highway. This road, which is completely rural west of Interstate 280, climbs steeply through areas of native vegetation toward the meadows along Skyline Boulevard, passing country scenes and woodlands, and providing exhilarating views. Palo Alto has established a 200-foot setback on upper Page Mill Road.

Foothill Expressway-Junipero Serra Boulevard is proposed by Santa Clara County as a scenic route. Alameda de las Pulgas, the extension of this route in San Mateo County, is proposed by Menlo Park as a scenic route. Within Palo Alto, this route is almost entirely bordered by Stanford lands that are either undeveloped or have large setbacks.

Scenic Highway Policies and Programs

Policy 8: *Provide safe, attractive scenic routes which will serve the motoring public, the bicyclist, the pedestrian, and in some areas the equestrian.*

Program 26: Willow Road, University Avenue, Embarcadero Road, Page Mill/Oregon Expressway, San Antonio, Interstate 280, and Arastradero Road from Foothill Expressway to Interstate 280 should be added to the list of protected scenic routes in Palo Alto.

Five urban streets: Willow Road, University Avenue, Embarcadero Road, Page Mill Road/Oregon Expressway, and San Antonio Road, are proposed scenic routes. These routes either are visually attractive or can become so.

Willow Road, from El Camino to San Francisquito Creek, will be widened and extended soon and will connect with proposed scenic highways in Menlo Park, San Mateo County, and Portola Valley. The generous setbacks that Stanford University requires of its tenants have preserved a feeling of open space.

University Avenue east of Middlefield is a curving street, lined with gracious magnolia trees. Many visitors remark on the striking entrance to Palo Alto that this tree-lined street affords. It passes the historic Squire House, whose facade has been preserved by a special easement. West of Middlefield, a beautified University Avenue traverses the City's Downtown and leads directly into Palm Drive, the formal main entrance to Stanford University.

Embarcadero Road, from Harbor Road to El Camino Real, is the main access to the Palo Alto Baylands. Embarcadero west of Bayshore Freeway is lined with trees and some houses of historic interest. The Baylands portion contains the site of historic Wilson's Landing on the former San Francisquito Creek and expansive views of open space.

Page Mill Road/Oregon Expressway, from Bayshore Freeway to Interstate 280, has wide setbacks in Stanford Industrial Park west of El Camino Real. Design criteria imposed upon its tenants by Stanford University have set a high standard for this route. The width and landscaping make the Oregon Avenue portion visually pleasing. The route leads to the Palo Alto Baylands and the foothills.

A landscaped median, bordering street trees, and setbacks of some of the development on San Antonio Road from Bayshore to Alma Street make visual improvement possible. The Los Altos portion of the street has won awards for its attractive landscape design. Some of the

intervening section in Mountain View is being renovated, and is proposed as a scenic road in that city's plan. It is possible to reach the site of the future Mountain View Shoreline Park and the south end of Palo Alto's Baylands on San Antonio.

Other arterials and collector roads in Palo Alto, even though not listed as scenic routes, will continue to be maintained and visually improved.

Program 27: Encourage State designation of Interstate 280 as a scenic route.

Interstate 280, or Junipero Serra Freeway, is proposed as a state scenic highway by most of the cities and counties along its length and Palo Alto should do the same.

Program 28: Coordinate the designation and regulation of scenic routes with neighboring municipalities and counties, and the state.

All of the proposed scenic routes in Palo Alto connect with those in other cities and counties. Each city's or county's plan should be reviewed before Palo Alto's scenic highway plans are put into effect. Skyline Boulevard is an example of overlapping jurisdictions. On Skyline, near Palo Alto's south border, the jurisdictions of two counties and two cities touch or overlap. Uniformity of city and county regulations should be attained.

7

Environmental Resources

Palo Alto's adopted Open Space Element, as amended in April 1973, is included as part of this Comprehensive Plan.

Conservation

Conservation is the wise management of natural and man-made resources to assure their continued availability for use, appreciation, and enjoyment.

Natural resources in Palo Alto include the underlying bedrock, the soils spread over the bedrock, the streams that flow through the soils and along channels from the foothills to the Bay, and the vegetation whose roots penetrate the soil and are watered by the streams. Additional resources are areas where mineral resources may be extracted, areas where agriculture may be practiced, lakes and ponds where water is impounded for irrigation or for recreation, sites of archaeological or historical significance, and buildings of aesthetic or historical interest.

Other information on conservation may be found in the Open Space Element and the Seismic Safety and General Safety section of the Plan, including descriptions of the natural environment and natural processes, and discussion of hazards due to seismic activity or flooding.

Objectives

The objective of the conservation plan is to preserve and enhance the natural environment consistent with human needs. Excessive water runoff from the foothills must be avoided. Erosion of the soil must be minimized. Fire hazards in the foothills must be reduced. Restoration of water to the underground reservoirs must be increased. Prevention of damage to structures must be achieved with the least possible alteration of the natural ecology. Enhancement of the aesthetic environment must be consistent with human recreational needs and the preservation of wildlife habitat. The quality of air and water must be improved by providing pollution-free areas for percolation into the water table and healthy vegetation for photosynthesis.

Conservation Lands and Resources in Palo Alto

Natural resources include the watersheds of Los Trancos, San Francisquito, Matadero, Barron, and Adobe Creeks, and their small tributaries. These watersheds can absorb rainfall in proportion to their steepness, amount of vegetative cover, and soil and rock type. Flood plains adjacent to the streams dissipated storm waters in the past. Periodic flooding restored fertility to the soil making flatlands prime agricultural areas. Storm waters also maintained the underground water table.

There are small limestone deposits high in the foothills, and a large greenstone deposit near Los Trancos Creek has been quarried since World War II.

Little marketable timber grows on the hillsides, but open tracts of land are used for grazing. Grazing lands are the primary vegetative resource of economic value in Palo Alto, although potential for various other kinds of agriculture exists. The aesthetic value of grasslands and wooded hills is also important.

In addition to providing wildlife habitat, the marsh portions of the Baylands are a vital link in the Pacific Ocean food chain. They provide for re-oxygenation and the removal of nutrients from Bay waters, which improves water quality.

Many types of animals and birds live in Palo Alto in the baylands and foothills and in residential areas where abundant trees and green spaces give food and shelter.

Man-made resources in Palo Alto important for conservation include those evidences that remain of the historic and prehistoric past. Known archaeological sites include a former Costanoan Indian settlement on the banks of San Francisquito Creek. There are historical sites of former Spanish adobes, travel routes and boat landings, many already marked by the Palo Alto Historical Association. Also, as noted in the section on urban design, there are buildings of unique style and recent historic interest.

What Can Be Done to Conserve Resources?

Excessive runoff of storm waters presents problems for the environment and for the human occupants of an area. Problems include erosion, siltation, and downstream flooding.

Policy 1: *Maximize water retention and minimize the effects of water runoff.*

Policy 2: *Encourage programs to improve the quality of storm water runoff.*

Four programs should be pursued to put these policies into effect.

Program 1: Review Palo Alto's grading ordinance and revise it where necessary.

The grading ordinance should be constantly reviewed and revised to keep it current with new knowledge. Erosion can be minimized by controlling grading and the removal of ground cover. The State Agricultural Extension Service and the Federal Soil Conservation Service have information on the grazing capacity of grasslands in the foothills. Any overgrazing which can contribute to soil erosion should be discouraged.

Program 2: Require replanting where vegetation has been removed.

This should be required as part of the review process of new development. Replanting of native species that require minimum cultivation should be encouraged. Areas of vegetation which provide wildlife habitat should be identified, protected, and replanted.

Program 3: Regulate land uses near water courses to reduce siltation and provide open, natural areas.

The Santa Clara Valley Water District has established a 50-foot building setback from the banks of all water courses under its jurisdiction. The City should cooperate with the Water District, the State Agricultural Extension Service, and the Federal Soil Conservation Service to control overgrazing of grasslands, removal of vegetation, and excessive installation of impervious surfaces next to creeksides.

Program 4: Continue to participate in the National Flood Insurance Protection Program.

Urban development has encroached on the natural floodplains and floodways in the flatlands and Baylands. It is not feasible to remove existing development from flood hazard areas, but precautions can be taken in the further development of those sites to minimize the potential for damage from flood waters. Such precautions would include channels, retention basins for flood waters, and elevation of structures.

Policy 3: *Encourage the re-use of treated water waste.*

Two programs are proposed to carry out this policy.

Program 5: Inject treated water underground to reduce land subsidence.

The Baylands and portions of the area along Bayshore Freeway have had significant problems because water extracted through wells has caused ground to subside. The rate of subsidence is significantly less today.

The Santa Clara Valley Water District has begun a program of ground water recharge to prevent future land subsidence and control the invasion of salt water into underground fresh water areas. Purified water from Palo Alto's Water Quality Control Plant will be injected into 18 recharge wells in various Baylands locations.

Program 6: Use treated water for irrigation.

New treatment methods to be installed at the processing plant will result in waste water of much more acceptable purity.

This initially will be used for irrigation of the municipal golf course and later should be used for wider areas of the City.

Policy 4: *Reduce the negative impacts of human activities on plant and animal life.*

Five programs have been developed to put this policy into effect.

Program 7: Encourage the planting of fire-resistant plants and control of flammable chaparral vegetation in the foothills to reduce fire hazards.

The City has a program underway in Foothills Park to introduce fire-resistant plants. Information developed by the City on this technique is made available by the Department of Nature and Science to owners of land in the foothills. Controlled chaparral burning in Foothills Park has been used to reduce the danger of wild fires.

Program 8: Control access to environmentally sensitive public areas in the Baylands and foothills.

Overuse of any area can cause deterioration not only of the plant and animal life, but of the total environmental quality.

Wildlife habitat areas should be identified, protected, and replanted where necessary.

Foothills Park is now used to its maximum and access is controlled. Access to the flood basin and other sensitive Bayland areas should also be limited, especially during the nesting season, to protect the marshland and upland meadow habitat. Visitors to both these parks must be educated to preserve sensitive lands.

Program 9: Reduce pesticide use and increase the use of natural predators and other biological controls.

The City has undertaken an integrated pest control pilot program that uses natural predators as well as pesticides. This program should be continued and expanded, and advice should be given to homeowners who wish to use similar means.

Program 10: Encourage owners of undeveloped prime agricultural land to take advantage of state programs, such as the Williamson Act, which will reduce property taxes in return for preserving the land.

Palo Alto has participated in the Williamson Act program since 1972 and should continue to do so. Other legislation that will assist in preservation of lands for agriculture and open space should be explored.

Program 11: Encourage use of vacant prime agricultural land for garden plots.

More City-owned land, not presently landscaped, could be opened to public use for garden plots. Some private owners of larger prime soil areas already provide garden land to their employees or other groups. This practice could be expanded.

Noise

The Noise Problem

Noise is a part of modern society—noise from motorized labor-saving devices, transportation vehicles, and recreation devices. People can tolerate or ignore a certain amount of noise but adverse effects including outright hearing impairment and other dangers to health are present in many exposures to noise.

The objective of this section of the Plan and Palo Alto's continuing Noise Control Program is to reduce noise which affects humans adversely.

The Effects of Noise on People

The problem of controlling noise is difficult because it affects each individual in a different way. People do not hear sounds alike or react to them in the same way. Each person's reaction to noise depends on characteristics of the noise itself—the loudness, duration, and frequency content, for example. The effect of noise on people is also determined by the listener and the situation.

The effect of noise levels above 80 dBA can range from a temporary loss of ability to hear quiet sounds up to permanent and irreversible loss of normal hearing.

Fortunately, few exposures to noise levels causing permanent hearing damage occur in Palo Alto. However, some problems may occur for those who attend loud musical and recreational events or for persons whose jobs involve high noise levels. Occupational noise is regulated by State and Federal legislation.

Noise may also disrupt activities such as sleep, conversation, reading, listening to records, or watching television. Studies have shown that noise not only may prevent sleep but may seriously disturb the quality of sleep without fully awakening the sleeper. Noise levels over 55 dBA disrupt all

types of normal listening activities. Noise also causes such subtle effects as distraction, annoyance, stress, and tension. If these effects are continued, they can cause very serious emotional and psychological problems. The noise environment is often not blamed directly for these reactions if the listener is not consciously aware of the noise intrusion. He or she may only be aware of an increased irritability and uneasiness. So protection against the intrusion of disturbing



Major sources of traffic noise are streets with high volumes, high speed, a large number of traffic controls or many trucks, buses, and other loud vehicles. Southern Pacific trains are another major source of noise. During peak traffic periods, the noise levels in parentheses are generally exceeded 10 per cent of the time at 50 feet from the traffic. Noise levels of 50 to 60 dBA are typical in neighborhoods not subject to heavy traffic.

How Loud Is Loud?

Relative Intensity of sound		Sound Level in dBA
1,000,000,000,000	Auto horn (3'). 4-engine jet (100')	120
100,000,000,000	Rock music inside nightclub	110
10,000,000,000	Motorcycle without muffler accelerating. Jackhammer (25')	100
1,000,000,000	Stock motorcycle accelerating (25')	90
100,000,000	Power lawn mower (20')	80
10,000,000	Steady urban traffic (25')	70
1,000,000	Normal conversation (3')	60
100,000	Daytime street, no nearby traffic	50
10,000	Quiet office. Quiet neighborhood	40
1,000	Inside quiet home. Soft whisper (10')	30
100	Movie or recording studio	20
10	Barely audible sound	10
1	Threshold of hearing	0

A decibel (dBA) is a unit of measurement indicating the relative intensity of a sound as it is heard by the human ear. Every increase of 10 dBA doubles the perceived loudness although the noise is actually ten times more intense. For example, a power lawn mower (80 dBA) seems twice as loud as steady urban traffic (70 dBA).

noise is particularly important to mental and emotional health.

Motor Vehicle Noise

Vehicle noise is the most pervasive noise in Palo Alto and in most other communities. Through numbers alone, the effect of motor vehicle noise would be significant, even if each individual vehicle met state noise standards. Federal and state legislation will gradually reduce individual vehicle noise limits through 1988, but even then freeways and major city streets will remain the most significant community noise sources, particularly in Palo Alto where vehicle traffic is expected to increase.

Railroad Noise

Twenty-two Southern Pacific Railroad commuter trains run in each direction through Palo Alto daily during the week, and 10 each way on weekends. Almost all of these trains stop at one or both stations in Palo Alto. Also, up to 70 fast freight trains pass through weekly, usually at night.

Annoyance from train noise, which is between 80 and 95 dBA at 100 feet, is felt most acutely by residents along Alma Street, approximately 125 feet east of the tracks and along Mariposa Street and Park Boulevard, where houses are only 50-85 feet west of the tracks.

Until 1972, no agency had authority to regulate railroad noise. Now the Federal Environmental Protection Agency is beginning to set such standards which Palo Alto can help to enforce.

Aircraft Noise

Aircraft noise in Palo Alto is a relatively small part of the City's noise environment. In recent years, aircraft on submarine patrol and training aircraft operating from Moffett Field Naval Air Station have sporadically flown over the southeast section of the City on daytime training flights. This activity is decreasing as other training methods are used.

Overflights of large aircraft from San Jose Municipal Airport and San Francisco International Airport are at altitudes which make their noise effect negligible at ground level.

Noise levels caused by small private aircraft using the Palo Alto airport are low because airport use is limited to two-engine planes under 12,500 pounds, and a minimum altitude of 1200 feet is required over the populated areas west of the Bayshore Freeway. Helicopter flights and the concentration of small aircraft flights are particularly noisy. Aircraft noise problems would increase if the number of flights is significantly increased, flight patterns are changed, or larger planes use the airport.

Non-Transportation Noise

Noises not associated with transportation are more variable and unpredictable disturbances. Except for emergency equipment and activities, all non-transportation noise is regulated by the Palo Alto Noise Ordinance.

Control of Noise Sources

Palo Alto has done much to reduce noise and can continue to do so. However, some noise sources, such as railroads and certain airplanes, are controlled by agencies outside the City. However, the City can assist in the enforcement of regulations.

Policy 5: Support national and state legislation and programs which will reduce noise in Palo Alto.

Palo Alto can assist other agencies in developing legislation and can promote enforcement of adopted standards.

Program 12: Provide input on significant noise legislation proposals.

Program 13: Promote enforcement of existing state and Federal noise legislation.

Under State law, Palo Alto may not regulate noise from motor vehicles. The Palo Alto Noise Control Program emphasizes Police Department enforcement of existing California Vehicle Code regulations prohibiting loud motor vehicle mufflers of all kinds. From 1973 through 1975 over 4,000 muffler violations were corrected through this program.

Program 14: Provide City enforcement of state muffler and exhaust system regulations.

In 1972, Palo Alto adopted a noise ordinance which has resulted in an enforcement program designed to reduce the amount of noise. The Noise Control Program involves City enforcement of state motor vehicle regulations and control of non-vehicular noises.

Policy 6: Non-vehicular noise sources in Palo Alto should meet City noise ordinance regulations.

Program 15: Provide aggressive enforcement of the City noise ordinance.

The noise ordinance is primarily enforced by police patrol officers.

Common sources of industrial noise include pumps and air compressors, air conditioners, and construction equipment. Most noise complaints about industry are made by residents of nearby areas when machinery is run during the evening. Engineering modifications to reduce the noise usually solve these problems.

Residential sources causing frequent problems are amplified music, parties, barking dogs, and power equipment such as lawn mowers, saws, or swimming pool pumps. Noise ordinance controls apply to each of these disturbances.

Program 16: Modify City equipment to meet noise ordinance requirements.

An important phase of the City noise control program is the continuing effort to identify, test, and use quiet equipment and methods. Developing better mufflers and

quieter equipment is primarily the manufacturer's responsibility but slow progress in this area has resulted in local efforts at finding effective noise reducing equipment.

Planning and Design for Noise Protection

In addition to reducing vehicle and other noises, much can be done to protect people from high noise levels through proper site layout, building design, and construction methods.

Policy 7: Ensure compliance with existing noise laws and protection of residents from unnecessary noise.

Program 17: Analyze noise impacts of new projects.

The noise environment may be an important factor in the successful accommodation of changing uses for land and buildings. When planning a project in an existing noise environment, some easing of the effect on people can be achieved through proper design and construction methods to reflect or absorb the noise before it reaches them.

Recommended Average Daytime L_{10} Noise Levels		
Land Use	Superior	Acceptable
Light Industrial-Outdoor	65 dBA	75 dBA
Commercial/Office		
Outdoor	60 dBA	70 dBA
Indoor	45 dBA	55 dBA
Public/Park		
Outdoor	55 dBA	65 dBA
Indoor	45 dBA	55 dBA
Residential		
Outdoor	55 dBA	65 dBA
Indoor	40 dBA	50 dBA

The L_{10} noise level is the level exceeded only 10 per cent of the time. The recommended maximum levels are based upon preventing noise interference with human activities and are well below levels which could damage hearing. The indoor standards apply to noise produced by outdoor noise sources. Residential outdoor levels should be 10 dBA lower in the evening than in the daytime.

When there are natural features on a site, such as hills and ridges, valleys and depressions, they should be preserved and incorporated into the site plan as a buffer against noise sources.

Noise can be scattered, absorbed, and reduced by all types of leafy plants. A planted strip of trees and bushes 50-100 feet wide is necessary to reduce the noise level significantly.

There are two other ways in which plants can be useful in reducing the effect of noise. First, a visual screen of plants between a noise source and a sensitive area is not only aesthetically pleasing, but also reduces the noise level perceived by those who cannot see the noise source. Rows of dense bushes, vines, or trees planted along a major ex-

pressway soften the impact of the traffic, even though the actual noise level is reduced very little.

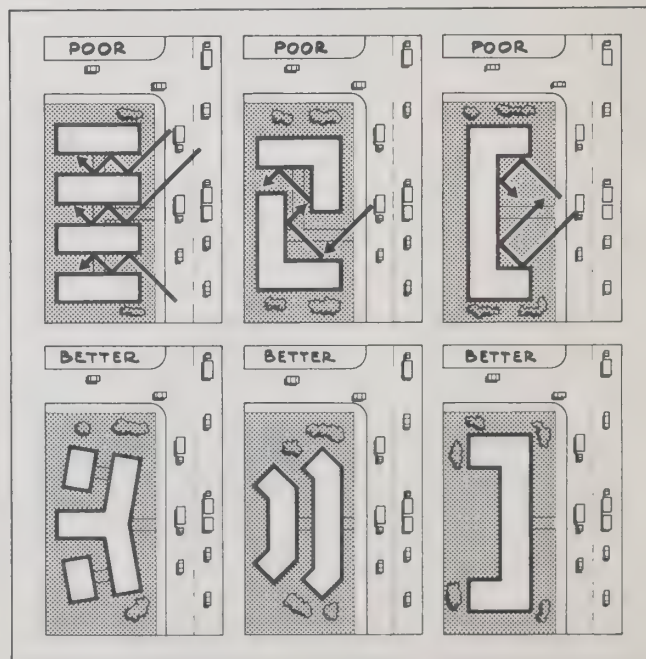
Second, bushy plants located around walls, hills, road shoulders, and other large impervious obstacles improve their effectiveness as noise barriers and lower the amount of noise reflected from hard surfaces.

Sound intensity or level increases as distance from a noise source decreases. Buildings should be located to take advantage of whatever distances are available on the site.

Physical characteristics of buildings can provide two kinds of noise control benefits—reduction in sound levels transmitted into the building, and reduction in sound levels for nearby outdoor areas.



Planting and landscaping, especially with solid barriers or natural contours, can be valuable to control noise. However, plants do not reflect much sound and a very large amount of thick foliage is needed to absorb measurable amounts of noise. A single row of trees or bushes is not an effective noise barrier.



Cavities which face or surround noise sources and act as reverberation chambers should be avoided. Buildings with special noise insulation can be located facing noise sources and act as shields for other portions of the site.

Long and high buildings can be excellent noise barriers to protect portions of the site. Enclosed spaces facing a noise source should be avoided because they collect and amplify noise. Courtyards and similar designs should face away from any significant noise sources. If possible, buildings should be oriented so that a corner rather than a side faces a noise source. This will help disperse noise in several directions. Noise-producing facilities such as parking lots or swimming pools should not be enclosed by living units, or serious noise disturbances to residents may occur.

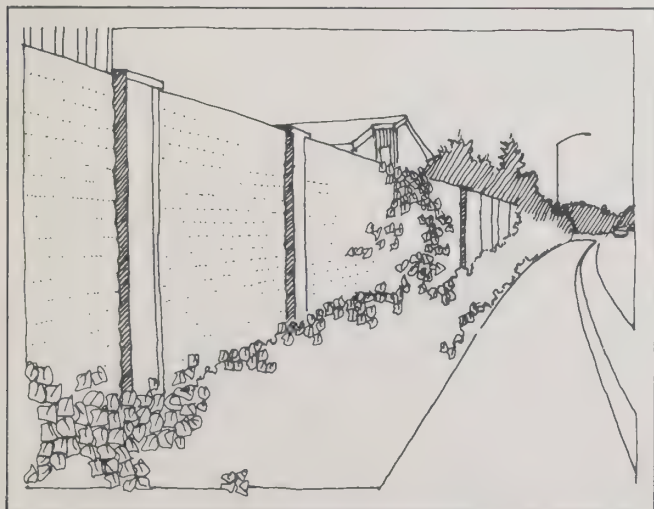
Program 18: Require adequate noise control in all new buildings.

In new buildings, efforts should be made to prevent transmission of outside noises, to minimize equipment noises, and to minimize noise transmission between one room or area and other parts of the building.

California law requires new multi-family buildings to maintain an interior noise level due to exterior noise of less than 45 dBA in any room. This means that attention must be paid to proper architectural design, construction materials, construction methods, and heating, plumbing, and electrical equipment. Deficiencies in any of these areas will compromise other good noise reduction practices.

Program 19: Construct noise barriers where the impact of noises can be significantly reduced.

A noise barrier may be any solid structure high and dense enough to reflect rather than transmit sound waves. Many Palo Alto neighborhoods exposed to high transportation noise environments are candidates for noise barrier protection—Bayshore Freeway, Alma Street, Embarcadero Road, and Middlefield Road, for example. Many are limited by the necessity for street and driveway access through the barrier, which severely reduces its effectiveness. The aesthetic effect of a wall on a neighborhood must be considered. Often a noise barrier can be incorporated in the original tract design to great advantage without looking un-



High walls constructed of concrete, brick or other dense materials can shield areas from loud noise sources such as heavy traffic.

sightly. While an eight foot wall between Alma Street and SP tracks would reduce a major noise source for area residents, the noise from motor vehicle traffic would remain an irritant.

Program 20: Improve capability to predict noise impacts of proposed activities.

Research on noise impacts is important in quieting vehicles and other equipment, developing new construction and site planning standards and techniques, and learning more about the effect of noise on humans. Palo Alto should encourage and participate in appropriate noise research efforts.

Air Quality

What is Air Pollution?

Air pollutants are those substances found in the atmosphere which exceed naturally occurring quantities and are undesirable or harmful in some way. Many kinds of pollutants, including particulates, liquid mists, and gases have been identified. Most human activities cause some air pollution.

Some pollutant emissions pose a direct threat to health. In more subtle ways many air pollutants are responsible for plant damage and crop losses, physical deterioration of materials, and aesthetic depreciation. Federal Primary Ambient Air Quality Standards establish the levels of air pollution which represent potential danger to human health.

Improving Palo Alto's air quality is the objective of this section. Accomplishment involves local, regional, state, and federal programs.

Air Pollutants and Their Effects

Particulates, carbon monoxide, organic compounds, nitrogen oxides, and sulfur oxides are the five major pollutants named for control because of their adverse effects.

Particulates include solid particles, dust, and smoke emitted into the air from burning, wind, industrial processes, or vehicles. Depending upon the size and weight of the particles, they may settle to the ground or remain suspended indefinitely. Particles may damage plants and materials, reduce visibility, or carry poisonous or irritating chemicals into the human respiratory system. Industrial sources produce about 70 per cent of the particles emitted by Bay Area sources, and transportation sources produce the rest.

Carbon monoxide is an odorless, invisible, and potentially lethal gas which is formed by incomplete burning processes such as those of internal combustion engines. In small amounts, it causes headache, fatigue, dizziness, and impairment of muscle coordination because it reduces the oxygen-carrying ability of the blood. High levels of carbon monoxide place an added stress on people with heart, blood, and respiratory ailments. Vehicles produce approximately 95 per cent of the carbon monoxide emissions in the Bay Area.

Petroleum-based chemicals such as fuels, paints, and solvents produce organic air pollutants through evaporation

and combustion. They contribute to objectionable odors and plant damage and play a major part in the formation of smog. Approximately 50 per cent of these emissions are produced by vehicles in the Bay Area, and 50 per cent by stationary industrial sources.

Almost 80 per cent of "clean" air is nitrogen. Whenever anything burns at a high temperature such as inside an automobile engine nitrogen also burns, forming several different oxides of nitrogen. These then become primary ingredients in smog formation and provide the characteristic brown color. Nitrogen oxides can cause damage to plants, fading of paint and fabric, as well as irritation to eyes and respiratory system. Approximately 65 per cent of the oxides of nitrogen in the Bay Area are produced by transportation sources and 35 per cent by stationary sources.

Whenever fossil fuels such as coal or oil are burned, the sulfur present is released as oxides of sulfur. These airborne gases can seriously affect plants; they can damage paints, metals, fabrics, and construction materials. When they are combined with high particle concentrations, they can cause severe respiratory illness. Nearly 77 per cent of the sulfur dioxide produced in the Bay Area comes from petroleum refining and chemical manufacturing, and the remainder from various other industrial and transportation sources.

Smog is the most well-known air pollutant. Although the word originally meant smoke and fog the combination of pollutants which causes smog has nothing to do with either smoke or fog. Smog results from a very complex chemical reaction in the atmosphere between various organic compounds, nitrogen oxides, and sunshine. Smog causes extensive vegetation damage, eye irritation, and impaired breathing. Smog formation is highly dependent on the amount of vehicle use.

Weather and Topography

The distinction between pollutant emissions and pollutant concentrations is important in understanding the problems of improving air quality. Emissions are the total amounts of pollutants produced by sources; concentrations are densities of a pollutant. Emission measurements indicate how well source controls are working, and concentration measurements indicate the resulting air quality.

After they are emitted, pollutants can either be dispersed and mixed throughout the atmosphere, or they can be trapped and continue to increase the local pollutant concentration. Local weather and topography determine what actually happens to emitted contaminants. Hills and mountains may form natural air basins which allow air pollutants to be trapped and accumulate. Both Los Angeles and San Francisco regions have such "closed" air basins. Even though daily emissions are about the same in a given air basin, variations in air temperature, wind speed, and wind direction cause the air quality to vary greatly from day to day. Air pollution is worst when pollutants are prevented from rising vertically by a "temperature inversion"—a layer of warm air above cooler air. If there are also terrain bar-

riers, or no wind to blow the emissions away, the emissions are confined near the ground. These conditions create a rapid build-up of pollutant concentrations, and in the presence of sunshine form smog.

Present Controls and Local Air Quality

Regional Controls. Bay Area stationary air pollution sources are under the authority of the Bay Area Air Pollution Control District (BAAPCD), although ultimately the federal Environmental Protection Agency (EPA) is responsible. District regulations and enforcement policies focus on major large polluters. Local jurisdictions can assist in identifying problems.

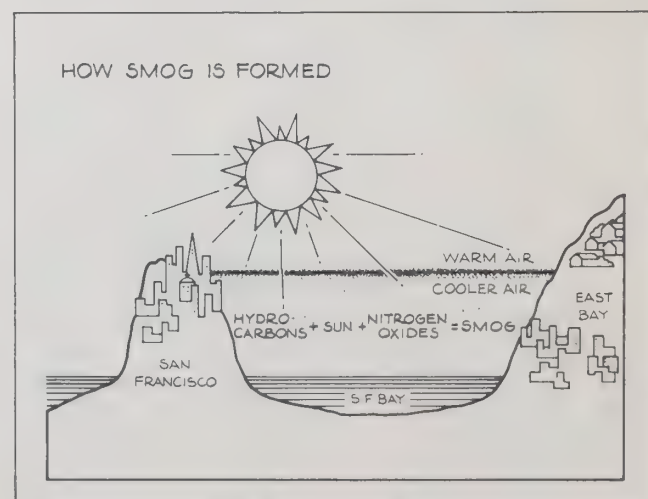
Vehicle emission controls are also the overall responsibility of the EPA, but California Air Resources Board regulations, starting in 1965, have been more stringent than federal regulations.

Local Air Quality. The quality of the air in Palo Alto, as in other areas, is extremely variable. On a given day it depends on the amount of emissions by vehicles and industry within the entire regional air basin, and upon the weather.

Most BAAPCD instruments for measuring air quality are located on building roofs rather than at ground level where humans are exposed. Thus, BAAPCD air quality measurements which show that Ambient Air Quality Standards are exceeded in the Palo Alto area approximately five per cent of the time underestimate the exposure of many people who live, work, or play near emission sources, particularly major streets. Therefore, adopting procedures to reduce human exposure to pollutants is important.

Recommendations for Air Pollutant Impact Reduction

Policy 8: Support reasonable regional, state, and national programs which improve air quality in the Bay Area.



Sunlight and calm air are necessary for smog formation. A layer of warm air above cooler air traps pollutants. The sunlight's ultra-violet energy reacts with the pollution to create smog.

Program 21: Provide City input on significant air quality legislation proposals.

Program 22: Assist the Bay Area Air Pollution Control District (BAAPCD) in achieving compliance with existing regulations.

Air pollution is a regional problem as well as a local one. Automobile travel, industrial activity, and other sources of pollution in San Mateo County, San Francisco, Oakland, San Jose, and other portions of the Bay Area affect Palo Alto, and Palo Alto pollution affects other parts of the Bay Area. Palo Alto can assist efforts to decrease air pollution by supporting reasonable and economically feasible air quality legislation. Palo Alto can also assist in the regional effort to decrease air pollution by carrying out Programs 22, 23, and 24.

Policy 9: Mitigate impact of air quality problems due to stationary and vehicular sources.

While major efforts to reduce air pollution focus on regional, state, and national agencies and programs, there is much that Palo Alto can do to reduce the amount of air pollution created and diminish the negative effects of pollutants.

Program 23: Review proposed projects to reduce negative air quality impacts.

In addition to control of emission sources, planning policies, zoning, traffic control, and open space conservation are all fundamental to the improvement and maintenance of regional and local air quality. New or changed use for operations such as paint and repair shops, manufacturing plants, or commercial cleaning facilities should be carefully evaluated with regard to air pollution.

Site design can greatly affect the impact of air pollution. Areas used for intensive human activities should be located on the site as far from significant emission sources as possible.

Topographic contouring, landscaping, and plantings of trees, shrubs, and ground cover next to emission sources will mix, filter, and disperse pollutants, reducing subsequent human exposure.

Program 24: Improve capability to predict air quality impacts of proposed activities.

Improving the ability to predict how much air pollution specific private developments or government policies will cause is important in future efforts to improve air quality. Palo Alto should cooperate with regional, state, and national agencies which are carrying out research in this field.

Program 25: Implement programs to reduce total transportation related emissions through the encouragement of more efficient use of private vehicles and increased use of mass transit and other modes of travel.

The Transportation section of the Plan discusses ways to reduce the use of private automobiles and increase use of mass transit. Traffic congestion in Palo Alto is a primary concern and the automobile causes a large amount of air pollution.

Program 26: In reviewing and granting building permits and in approving rezonings and subdivisions, the City should encourage builders and developers to provide improvements that will reduce the number of cars occupied by only one person. These improvements could include preferential car pool parking, bicycle storage, bus stop shelters, and substitution of landscaping for some required parking spaces.

Carrying out this program through ARB, Planning Commission, and City Council review of development proposals will help prevent further worsening of Palo Alto's noise levels and air quality.

Seismic Safety and General Safety

Seismic safety identifies and appraises geologic hazards and discusses the resulting risk to people and property. These hazards include fault ruptures of the earth's surface, ground shaking, ground failures including mudslides, landslides, liquefaction, and slope instability, and the effects of earthquake-induced waves.

General safety involves the protection of the community from geologic hazards, floods, and fires. Safety hazards such as building collapse, water, gas, sewer, and electric line damage; communications disruption; and fire or explosion potential are included.

Objectives

The objectives are to reduce potential injury and loss of life and to lessen possible property damage.

Safety from geologic hazards would seem to be relatively easy to achieve if it were not for pre-existing major structures. Land use decisions in the past have not been based on avoidance of such comparatively infrequent phenomena as fault rupture, ground failure, ground shaking, and flooding.

Land use and structural controls may appear to be much more expensive than the potential loss due to a disaster. Social and economic dislocation can result from controls applied too rigidly, and the degree of risk the community is willing to live with must first be established. It is necessary to achieve a balance between cost of hazard reduction and potential cost of losses. Recommendations should be carried out in phases to achieve this balance.

What are the Geological Hazards in Palo Alto?

Palo Alto includes hills composed of rock masses of many kinds and ages mantled by a thin, smoothly contoured cover of soil. Some soils move slowly downhill, tilting fences and walls. However, both soil and underlying rock can under stress conditions slide more spectacularly. Slow

erosion occurs over all soil surfaces from water runoff. Disturbances of the soil mantle increase the rate of erosion. All of these surface processes deliver sediment to the streams and to the Bay.

In the past, great aprons or alluvial fans of flood-borne sediment were spread out from the foothills to the Bay, forming the gently sloping plain upon which most of Palo Alto's residents live. Streams such as San Francisquito Creek have cut deep channels in the upper parts of the alluvial fans so floodwaters no longer overflow the upper reaches of the Palo Alto plain.

Tidal action in the Bay has created salt marshes by building up layers of fine silt in the eastern part of Palo Alto. Some of the former marshlands have been "reclaimed" by draining and filling, while some remain in wetland condition.

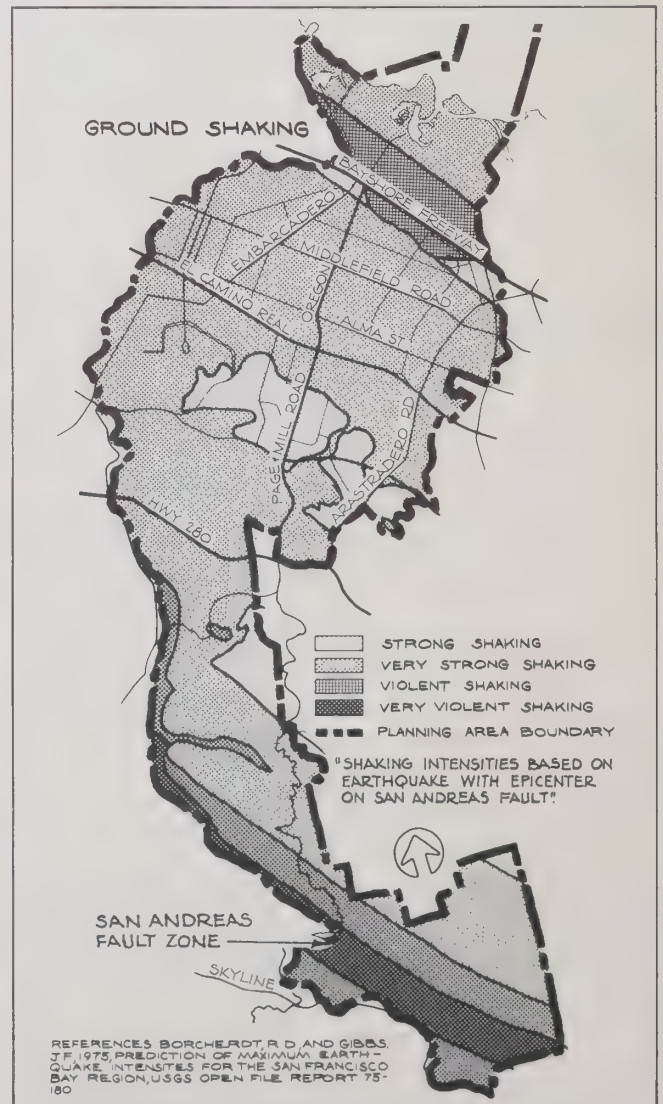
Fault movement causing rupture of the ground surface is the most direct hazard to man-made structures. Buildings or utility lines astride a fault will receive some damage from the stress of significant surface rupture. The last major earthquake on the San Andreas fault affecting Palo Alto occurred in 1906. In Palo Alto the trace of this active fault generally lies west of Monte Bello Ridge along the align-

ments of Stevens Creek and Los Trancos Creek near where Page Mill Road joins Skyline Boulevard.

Another system of faults which extends into Palo Alto is called the Sargent-Berrocal fault zone. Earthquakes of low intensity have occurred on this fault in the area of Los Altos, Los Altos Hills, Los Gatos, and Saratoga in 1967 and 1973.

Ground shaking from an earthquake causes the most widespread damage to life and property. It is a result of surface wave movement through the earth's crust, originating from the earthquake epicenter or focus. The ground motion created by these seismic waves is not constant because it is directly related to the type of material and surface topography through which the waves pass. The photographs of University Avenue in 1906 show damage to buildings in Palo Alto as a result of ground shaking in the 1906 earthquake on the San Andreas fault.

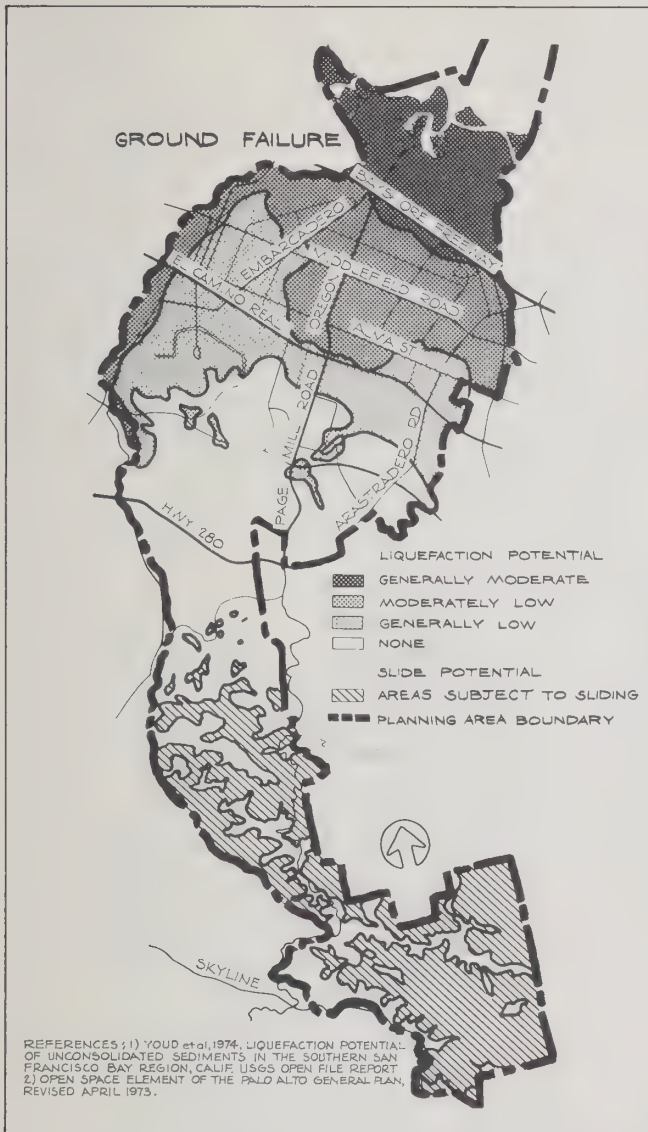
For example, a strong earthquake centered in hard rocks would cause one or more sharp shocks near the epicenter



Ground shaking from an earthquake causes the most widespread damage to life and property.



The 1906 earthquake caused extensive damage in Palo Alto. The top photograph shows University Avenue looking easterly from the Circle. The bottom photograph is the southwest corner of Emerson and University.



Ground failure can involve land slides and liquefaction. Land slides can occur with or without earthquakes. Liquefaction happens as the result of an earthquake when shaking causes water-saturated ground to behave as a liquid.



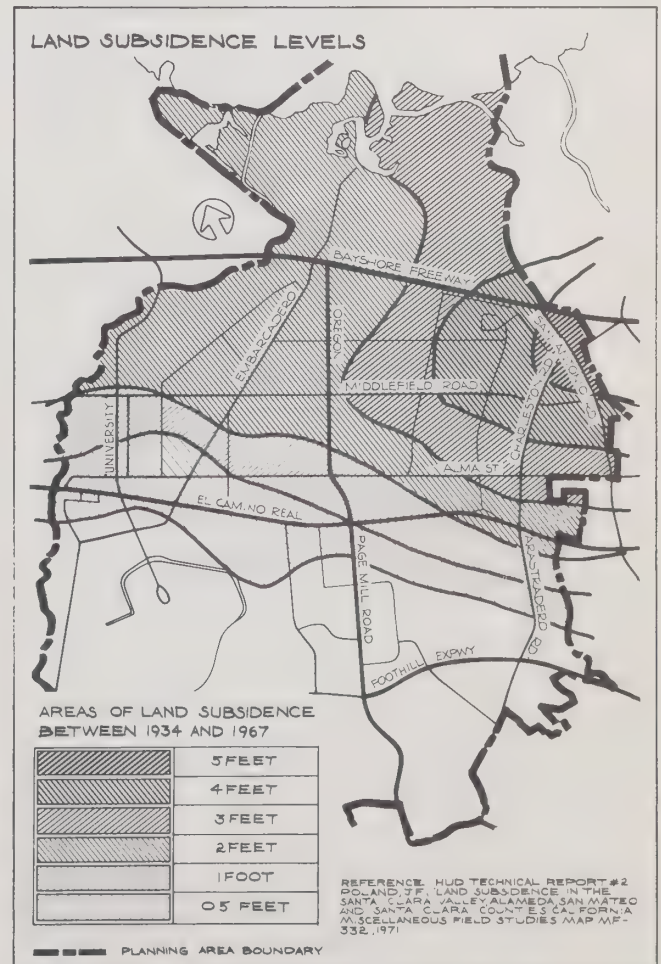
Ground failure is a major problem during earthquakes. The photograph shows ground failure near the Salinas River in 1906. The soil in this area is similar to that in much of Palo Alto.

and longer, slower, and probably greater vibrations in loosely-compacted ground. The Ground Shaking map gives an idea of the area where greatest ground shaking could be expected from an earthquake centered on the San Andreas fault in or near Palo Alto.

Ground failure can occur as a result of earthquakes or other natural forces including heavy rains, erosion, removal of ground cover by fire, or as a result of human actions.

Landslides and mudslides occur in areas of loosely consolidated material and are often triggered by earthquakes. Water-saturated soils are particularly susceptible to sliding. Areas of the Palo Alto foothills are subject to landslides. Although present regulations require geologic and soils reports for each building site, landslide potential in Palo Alto has not been mapped in detail. Heavy rains can cause loose material to slide without earthquakes. Human activities such as watering the soil, disturbance of the natural drainage, or removal of ground holding vegetation by cutting or fire can also cause landslides.

Another form of ground failure is liquefaction, which occurs as the result of an earthquake when grains of sediment become saturated. The sediment becomes unstable



Sinking of the land has been caused by withdrawal of underground water from wells. Subsidence of as much as five feet in Palo Alto has made problems for the utilities and has increased flood prone areas. The rate of subsidence has decreased in recent years.

and may behave as a liquid, causing sudden ground failures. Greatest potential for liquefaction in Palo Alto is near present and former stream channels, near the Bay, and where the water table is high.

Subsidence has occurred throughout the alluvial plain of Santa Clara Valley. It is the result of man's withdrawal of water from the underground water-bearing rock and the resulting compaction, or settling, of the ground.

As the land subsides, so do the levees, but the sea level does not. Because of increased subsidence, levees had to be raised to prevent flooding. Problems have been created for utilities by subsidence, where areas which once drained naturally now retain water. The map of Land Subsidence Levels shows historic subsidence in Palo Alto.

Flooding can occur in Palo Alto as a result of heavy rains, dam failure, levee failure, or earthquake-caused waves. Flood danger has probably been increased in some areas by ground subsidence. The 100-Year Flood, as projected on the Potential Flood Areas map, would cover a large part of Palo Alto to varying depths. Flooding in 1955 was widespread, as a result of an estimated 50-year storm. "The 100-Year Flood" is the maximum flood level used in the design of flood protection measures; it is likely to occur once each century but could happen in any year.

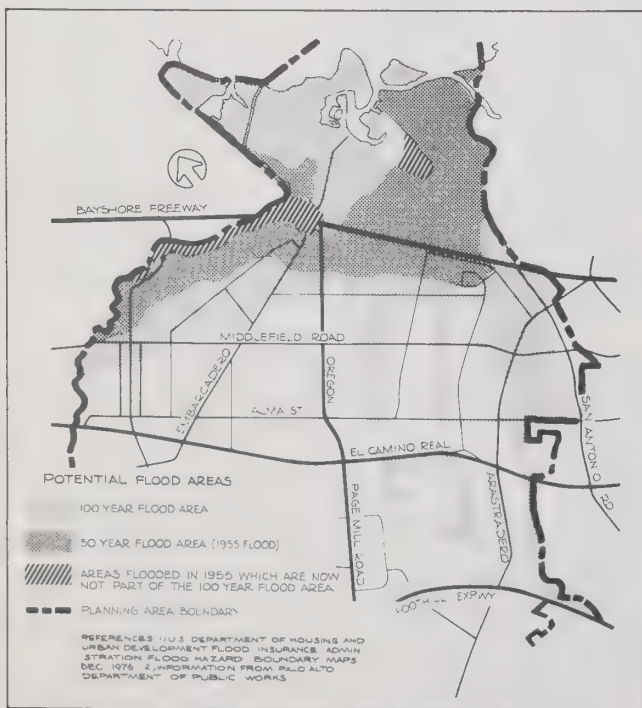
Flooding is a result of overtopping of their banks by San Francisquito Creek, Stanford Ditch, Matadero, Barron, and Adobe Creeks. The construction of bridges and culverts

with sometimes inadequate capacity and a potential for blockage by debris, as well as the addition of impervious surfaces which reduce absorption of storm water into the ground have increased the occurrence of flooding.

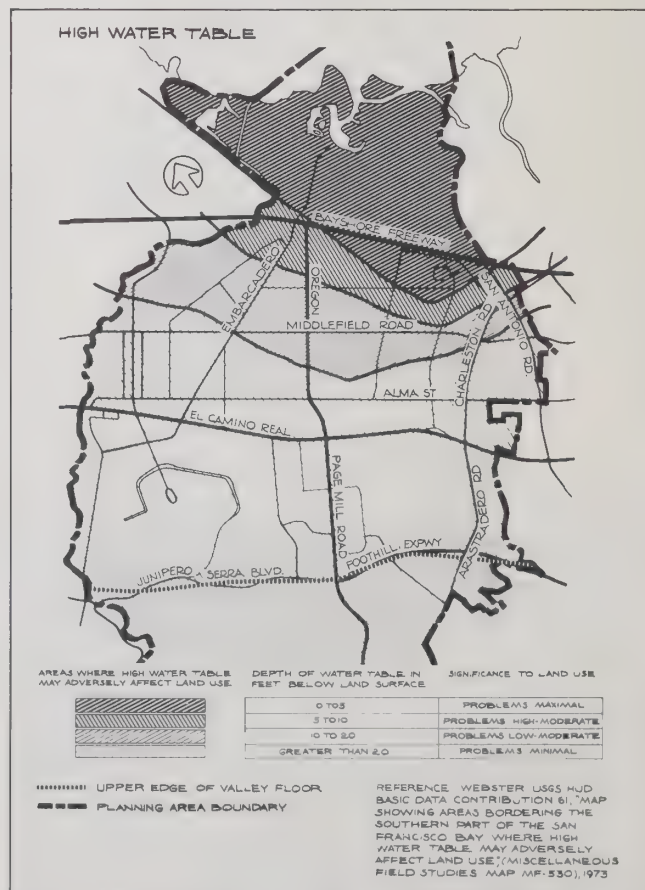
Failure of Searsville, Felt, and Lagunita dams upstream from Palo Alto could also cause considerable flooding; the potential maximum inundation area has been mapped.

Flooding by salt water could occur as a result of failure of the levees along the Bay side of Palo Alto, or possibly from earthquake-induced waves in the Bay.

The levees around most of the south Bay were originally built to create evaporation ponds for salt production, but now serve as protection for developed lands. The Santa Clara Valley Water District has jurisdiction over and maintains the levees in Palo Alto. Most of the levees are constructed of compacted Bay mud. The levee elevation estimated by the Bay Conservation and Development Commission in its Bay Plan Supplement as necessary is 10 feet above sea level in the south Bay. This height includes seven feet for water and three feet for protection against storm waves. This implies that without the levee system, Palo Alto would be subject to salt water inundation at high tide to an elevation of seven feet. The most recent topographic map (1961) shows considerable developed areas in Palo Alto within five feet or less of sea level.



Flooding can occur in Palo Alto as a result of heavy rains, dam failure, levee failure or earthquake-caused waves from the Bay. "The 100-Year Flood" is the maximum flood level used in the design of flood protection measures; it is likely to occur once each century but could happen in any year. A 50-year flood level occurred, as shown, in 1955-56. Since 1956, flood wall construction along San Francisquito Creek and expansion of the Refuse Disposal Area have created two areas which are no longer susceptible to flooding.



In parts of Palo Alto the water table is within five feet of the ground surface. This causes flooding, rotting of plant roots, frequent swelling and shrinking of the soil, and damage to buildings.

A high water table, while not in itself the cause of flooding, reduces water storage capacity of the ground and can cause much damage to structures and increase the danger of liquefaction. As shown on the Water Table Map, in parts of Palo Alto the water table is less than five feet below the surface.

Avoidance of Risks

An idealized plan for Palo Alto would regulate development to maximize safety from natural disaster. Development should be less dense in areas of greatest hazard. As shown on the Risk Zones Map, areas of greatest risk in descending order include (1) active fault zones, (2) areas of most unstable ground such as Bay mud and landslide-prone hillsides, (3) areas of moderately unstable ground because of potential damage from liquefaction, and (4) alluvial soil sus-

ceptible to increased seismic shaking.

Ideally, structural controls for each of these areas should be established, and emergency facilities with safe access routes should be distributed to serve a maximum of the population. Lands where extreme geologic hazards exist might be considered as areas where no occupied structures should be built. Many of these areas have been reserved for open space of conservation uses and other areas should be considered for such designation. Those with severe but less extreme susceptibility to geologic hazards would be areas where structures must be subject to special regulations. Only low-occupancy buildings of special design might be permitted in these areas, and public facilities and transportation networks should take these geologic hazards into consideration.

As the idealized plan was not drawn up before Palo Alto developed, however, the City must apply hazard mitigation measures to the development that does exist, and regulate those still undeveloped areas in a manner consistent with known and suspected hazards. Suggestions for such actions are contained in the Hazard Reduction Program.

Safety Hazards

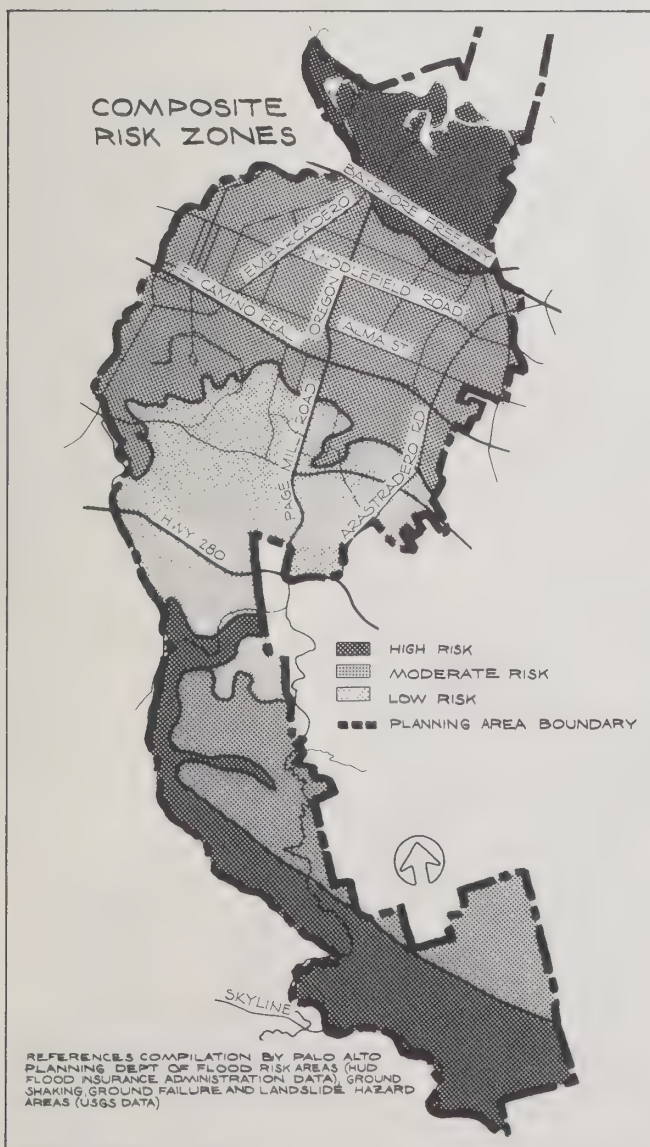
Building damage or collapse. Structural engineers do not agree about the best way to design buildings to reduce the danger of damage or collapse.

Buildings in Palo Alto of high occupancy and of three or more stories were mapped. Critical buildings with involuntary occupancy such as schools and hospitals are indicated on the Areas with Buildings of High Density Occupancy map. Before 1933 building codes did not regulate construction to resist earthquakes. Buildings built before then have been identified. Thus, areas in the City where more detailed investigation is needed can be seen at a glance.

Stanford University has a master plan for bringing its buildings up to present building code during the 1980s, and has completed a seismic analysis of two hospital buildings, as required by state law.

Disruption of lifelines will result from a great earthquake in Palo Alto. These include water, gas, sewer, telephone, and electric lines. The amount of disruption, of course, depends upon the magnitude of the earthquake. If movement occurs on the Hayward fault in the East Bay, the pipes of the San Francisco Water Company, from which Palo Alto receives its supply, could be broken. Because the water distribution system supplies water for sewage collection, an earthquake could cause flows to diminish rapidly. Sewage treatment needs electricity for pumps and gas for combustion, showing the inter-dependence of all utilities.

Water Supply. The photograph shows a 30-inch water pipe that was crushed in the 1906 earthquake. No water was available for nine days following the San Fernando earthquake of 1971.



Fault line areas have the greatest risk for man-made structures. High risk is also associated with Bay mud, landslide-prone hillsides and areas susceptible to flooding. Moderate risk areas involve potential liquefaction, ground shaking, and some flooding. Low risk areas are susceptible to some liquefaction and some ground shaking.

Two sets of pipelines bring San Francisco water to Palo Alto. Palo Alto water is stored in six reservoirs with a total capacity of 10.5 million gallons. Landslides or strong shaking could rupture these tanks or damage the connections to them. The City also owns 10 unused wells throughout the flatlands area. They could be used for emergency supply if they were not damaged and if electricity were available for their pumps. Also, there are about 100 private wells in Palo Alto that could be used for emergency water supplies with adequate disinfection and available electric supply.

Sewage System. Sewage in Palo Alto is collected from grid-work of mains throughout the City. The pipes are clay asbestos cement and reinforced concrete and those in the Baylands are heavily used and highly vulnerable to earth movement. Infiltration could occur in the mains as a result of flooding or earthquake. It took five months to restore sewage lines after the 1971 San Fernando earthquake.

Natural Gas is purchased by Palo Alto from the Pacific Gas and Electric Company and enters the City system at three locations. There are valves to shut off portions of the system every two to three blocks. The pipes are steel and plastic with constant pressure. Fire and explosion are the major dangers from disruption of gas lines.

Electric Power. Palo Alto buys its electricity from the U.S. Bureau of Reclamation, and it is delivered from the Ravenswood substation near Dumbarton Bridge over PG&E transmission lines to the Colorado substation. From there it is transmitted to nine other substations and then distributed in a grid pattern throughout the City. Those lines which are underground have been waterproofed, although the substations have not. Substations are very susceptible to earthquakes and suffered heavily in the San Fernando earthquake of 1971.

Stanford University, except for the Medical Center, purchases electricity and gas from PG&E and water from the San Francisco Water Company. The University contracts with Palo Alto for sewage disposal. Stanford campus utility distribution lines are not operated by Palo Alto.

Telephone service is provided by the Pacific Telephone Company. Telephone lines use electric distribution poles and underground trenches. Telephone service is less likely to be interrupted than electricity because the lines will not short out when damaged unless actually ruptured. The Palo Alto exchange buildings on Hamilton and Lambert Avenues contain all switching equipment.

Disruption of communications routes and/or facilities. Temporary local disruptions of roads as a result of earthquake are quite possible, due to blockage of underpasses, fallen trees, collapsed buildings, broken bridges, or fallen power lines. City emergency facilities are focused on the Municipal Service Center, which is in an area subject to possible flooding, liquefaction, severe ground shaking, and

temporary isolation from the rest of the City. The City Hall is designated the nerve center of emergency operations. Spread throughout the City are other facilities important to public safety and rescue work such as schools, fire stations, and churches, but a recent analysis of the structural safety of fire stations and churches has not been made, and they do not stock emergency supplies.

Fire or explosion or both are safety hazards that could result from an earthquake. Fires in the foothills would most likely be caused by man, but fires or explosions in the urban areas of Palo Alto could result from disruption of gas mains or rupture of tanks storing flammable materials. Fire stations in Palo Alto do not have auxiliary water storage tanks or large generators.



Water, gas, sewer, and electrical lines are susceptible to disruption in earthquakes. Many of these vital services in Palo Alto cross or lie in the most hazardous risk zones. Stanford University's utilities are not supplied by Palo Alto with the exception of the sewage disposal.

Hazard Reduction Program

Areas of greatest risk, as shown on the Risk Zone map, are not uniformly the most densely populated areas.

A study has been made of population distribution in Palo Alto by census tract showing where people would be located at two times of the day. This study shows that at 2 a.m. most people are in woodframe houses, structures which are least likely to suffer damage from a great earthquake. At 2 p.m. people are in school, at work, on the roads, and in commercial buildings which are areas of high population density and greater structural hazard.

Policy 10: *Measures to lessen risk to human life and property should focus upon identified areas of population concentration and keyed to areas of greatest natural hazard and areas of known or suspected structural hazard.*

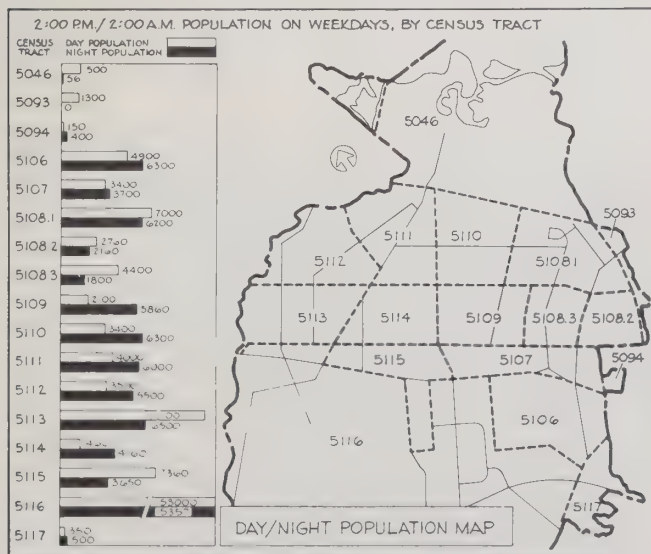
Four programs should be pursued to carry out this policy.

Program 27: Revisions to the zoning and subdivision sections of the Municipal Code should be made to recognize further seismically dangerous areas and flood hazard areas.

There are some parts of Palo Alto where development should not have taken place because of the environmental hazards. However, it is not feasible to remove this development. Hazardous area zoning could, however, be imposed upon these areas so that detailed geologic and engineering investigation would be necessary for additions or redevelopment.

Program 28: Contract with an engineering geologist for review of geologic, soils, and engineering reports; these reports should be prepared for development in all areas with high hazard levels.

Natural hazards already have been recognized in the Open



At 2 a.m. most people are in woodframe houses, structures which are likely to suffer the least damage from a great earthquake. At 2 p.m. people are in school, at work, on the roads, and in commercial buildings which are areas of high population density and greater structural hazard.

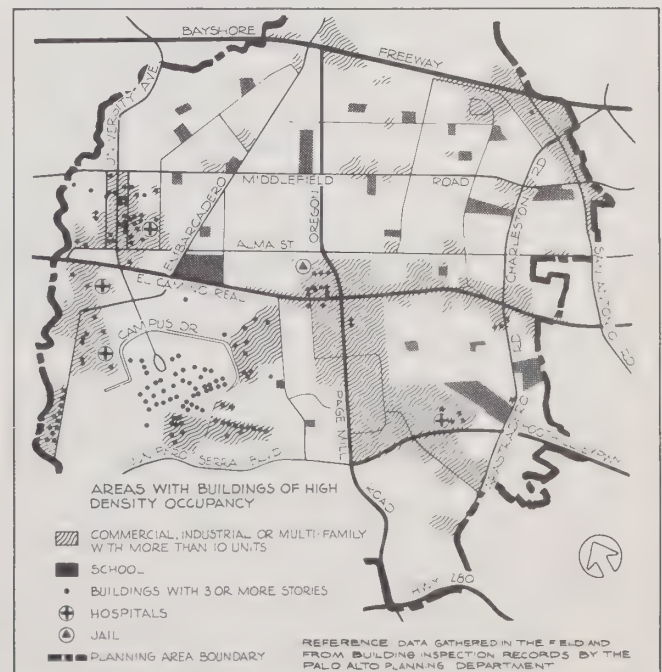
Space District regulations of the zoning ordinance which specify that an in-depth geologic and soils investigation and report must be prepared before development in all areas of Palo Alto southwest of Interstate 280. A similar requirement should also be imposed on other high risk areas in the City.

Review of the grading code has been undertaken by a firm of engineering geologists with the objective of making development as safe as possible in hazardous areas.

Program 29: The City should have a structural engineer inspect and evaluate all high-occupancy buildings and all buildings of more than two stories. City codes should be reviewed to ensure that a mechanism exists to require that public safety deficiencies are corrected by those responsible for the buildings.

An earthquake-proof building does not exist, but data accumulated following several recent major urban earthquakes have permitted engineers greatly to expand their knowledge of the response of structures to stress. Lives are most threatened by hazards from damage to or collapse of structures. Continued staff monitoring of all plans and construction is a vital part of enforcement of revised codes.

There are many inexpensive measures that can be taken to improve the safety of hazardous buildings. Removing or reinforcing parapets is an obvious example. Falling debris is a major hazard in urban areas during and after an earthquake. It is recommended that the program be carried out in phases. Stanford University has a continuing program of structural investigation of its buildings, and has installed a



An inspection should be undertaken by a structural engineer of all high-occupancy buildings including schools, hospitals, and buildings of more than two stories. Public safety deficiencies found should be corrected.

new emergency power system in case of disruption of its service from PG&E.

There are two hospitals in Palo Alto: Stanford University Hospital, including Hoover Pavilion, and the Veterans Hospital. Although it is only used for out-patients, the Palo Alto Medical Clinic could dispense vital services in an emergency. Structural inspection of critical medical facilities should be made to certify their safety.

Program 30: City officials should regularly review disaster plans to minimize potential earthquake-caused damage and disruption of service.

Among needed emergency utility services and facilities are access to safe water supplies, temporary auxiliary power sources, temporary sewage services, and measures to ensure safety of gas supplies if lines are ruptured or major shut-offs are necessary.

Communications networks are essential in time of natural disaster. Plans to maintain main transportation corridors should be made by the City's Streets Division. Alternate routes should be planned for access to areas of potential isolation in case of collapse of bridges and freeway overpasses. Structural investigation of key communications routes and facilities should be made.

Police and Fire Departments have the major responsibility in an emergency in Palo Alto. Emergencies resulting from small and moderate earthquakes and other natural disasters can be handled under existing plans, but in case of a greater disaster, Palo Alto would have to rely on aid from other jurisdictions. There are two-way radios and first aid equipment in each police and fire vehicle. Each fire station has a small auxiliary generator. Each department has drawn up plans for response to a disaster. Fire department regulations require apparatus at the City's five stations to be moved outside in case of an earthquake. The stations have been constructed to make equipment removal easy. An emergency operations center, located in the first underground level of the Civic Center, can function for two weeks without outside assistance. Alternate headquarters for both fire and police are designated at the Municipal Service Center. However, the center is located on ground subject to flooding, severe shaking, and isolation in a major earthquake.

Public Works and Utilities Departments have key roles in emergencies such as restoration of services and clearing of debris and transportation routes. All City departments have emergency plans and many have significant roles in providing shelter, welfare services, and communication coordination.

Palo Alto has an Emergency Plan which was adopted in 1971 and revised in April, 1975. This plan responds to the requirements of the State Office of Emergency Services for federal, state and local "civil preparedness." The nationwide program was begun in 1961 when the threat of a nuclear disaster seemed imminent, and is geared largely toward the response to such an emergency. Although such

response would, of course, be necessary and organization for it important, pre-emergency efforts are equally important. If facilities were planned and prepared to minimize potential damage to life and property in case of whatever natural or man-made disaster were to strike, the burden on post-disaster programs would be much less.

The Emergency Plan should be revised to reflect natural and man-made hazards.

Policy 11: *Strengthen coordination between City officials and other agencies that provide disaster relief.*

Program 31: Annual combined disaster exercises should be held by all departments and related agencies.

Mutual aid between adjoining cities and counties is available. Major state and federal assistance would be coordinated by the California Office of Emergency Services. Coordination between Red Cross, Stanford University, and City officials should be strengthened and particular attention should be paid to special hazard areas.

Post-Disaster Land Use Planning

Were major damage to be inflicted on Palo Alto during a flood or earthquake or both, an opportunity for rebuilding the City would be available.

The City should regulate rebuilding to minimize the effect of natural disasters. There should be designated flood plain areas where buildings should not be built, or built only to rigid specifications. There should be ample open space areas where flood waters could be absorbed into the ground to pass by on their way to the Bay. Areas of the City where severe ground shaking and ground failure would take place in an earthquake should be the Seismic Response Zone. In these areas, structural design of buildings would have to withstand maximum ground motion with minimum damage and risk to life. The added cost of such design should be balanced against potential economic disruption in an earthquake. Other portions of the City should be



Shifting and collapse of water, gas, and sewer lines is common during major earthquakes. The photograph shows a 30-inch water pipe which collapsed in 1906 northwest of San Andreas Lake.

regulated to minimize erosion, and to prevent any human activity that could trigger earth or mudslides or add to water runoff downstream. Geologic investigation to determine the presence of fault traces and present or past landslide activity should be required.

It would be difficult to superimpose these zones upon the present system of land ownership and development. A start could be made with regulations for new buildings, and

when the non-conforming ones are remodeled, the new regulations could be applied to them.

Although we hope that no natural disaster such as a great earthquake destroys Palo Alto, the City has a responsibility to its citizens to be as prepared as possible by anticipating some of the hazards and taking measures to strengthen buildings, control development in high risk areas, and prepare for post-emergency action.

8

Land Use

Palo Alto's 1990 Land Use Plan in the pocket on the back cover of this report shows proposed land uses and streets.

The Land Use Plan shows the City's intentions for the development, redevelopment, growth, and preservation of public and private properties within the Palo Alto planning area over the next 15 years. The planning area includes land within the Palo Alto City limits and unincorporated areas including Stanford University lands in Santa Clara County and several parcels in the Baylands and upper foothills.

Proposed land uses and streets echo existing patterns. This is because the flatlands of Palo Alto are largely built up. The City's decision to keep the foothills and Baylands predominantly open is reflected in the Open Space Element. Boundaries between land uses are quite specific and usually follow present property lines and existing land uses.

Objectives, Policies and Programs

The Land Use Plan brings together all of the map-related objectives, policies, and programs in other sections of the Comprehensive Plan. However, the Plan Map cannot reflect all the policies and programs which will influence allowable land uses. For example, the Plan Map does not reflect urban design policies and programs which deal with visual features, such as allowing non-conforming use for buildings of historic or architectural merit for the life of the building. Employment Policy 2: "The construction of housing should be encouraged in conjunction with non-residential development" and Program 6: "Provide incentives for all new retail and office construction to provide some proportion of residential space on or near the same site" are assumed in the definitions of commercial, research/office, and industrial land uses.

Housing

The Plan Map is drawn to reflect Housing Policy 1: "Maintain the general low-density character of existing single-family areas" and Housing Policy 2: "Preserve older single-family homes and small apartment buildings." Housing Program 1 will adjust densities surrounding Downtown. Allowable density will be highest adjacent to Downtown commercial areas, and lower next to single-family areas.

Business Districts

The Plan Map will eventually lead to changes in zoning of portions of El Camino Real from commercial to multiple-family and from service commercial to neighborhood commercial.

Transportation

The Plan Map in most cases reflects the policy of avoiding major increases in automobile traffic capacities.

The Plan Map shows the concept approved in 1975 for a four-lane Willow Road between Santa Cruz Avenue in Menlo Park and El Camino Real. The map also shows a proposed Page Mill/El Camino Real interchange which is needed to relieve the City's most congested intersection and reduce traffic in several residential areas.

Major transportation policies are to improve mass transit and increase transit ridership. Existing and proposed bus routes are mapped in the Transportation section. Transit planning, which is primarily the responsibility of Santa Clara County and the Metropolitan Transportation Commission, has not progressed to the point where rail transit lines can be included on a local Plan Map.

Schools and Parks

The Plan Map shows all the current public school sites. The Palo Alto Unified School District has decided to close Ross Road and Ortega Elementary Schools, both located near East Meadow Drive and Ross Road. It is expected that several more schools will be closed by 1990.

Potential uses for closed school sites are discussed in the Schools and Parks section of this report.

The Schools and Parks section proposes acquiring and developing district park facilities on one or more sites west of Alma Street and developing a second mini-park south of Downtown. Specific sites for these parks have not been shown on the Plan Map. The Plan should be amended when the City decides to purchase and develop specific sites.

Implementation of the Plan Map

The Comprehensive Plan, which includes the Plan Map, will become the foundation for proposed capital improvement projects when it is adopted. No subdivision or rezoning will be approved unless it is in harmony with the adopted Plan. It is expected that the Plan will become the basis for a new zoning ordinance for properties in Palo Alto.

The zoning map that will be developed as part of the new zoning ordinance should conform to the Plan Map. However, a Land Use Plan Map is different from a zoning map, and land use categories are not the same as zoning districts. For each land use category designated on the map, at least one zoning designation will be possible, and usually more. For example, within the single-family residential land use category, any of the following zoning designations from

the City's current zoning ordinance would be possible: Residential Estate, (R-E), Single-family (R-1), and Duplex (R-DUP).

Because the Land Use Plan Map has been drawn to reflect new City housing policies, some areas now zoned for apartment use, especially around the Downtown, are to be designated single-family residential, and some areas, especially around Downtown and along El Camino, where the present zoning allows offices or commercial uses, will be designated multiple-family residential.

In drawing the boundaries of these two land use categories, every effort has been made to minimize the number of properties where existing improvements would not conform to the proposed land use category. For example, the boundaries of the multiple-family area around Downtown were drawn so that as few existing apartment buildings as possible would fall into the single-family residential area. It was possible to minimize the number of such properties, but it was impossible to draw a map that eliminated them entirely and still carried out the Plan's policies. The City will follow this procedure in dealing with improved properties that do not conform with the Land Use Map:

The Planning Commission will review all such properties and will make a recommendation to the Council applying two standards. (1) Where the improvement is capable of being used by more than one use, and the current use is substantially incompatible with the surrounding area, an amortization period will be recommended to eliminate the use and to provide for uses compatible with the area. If the current use is compatible, the property will be restricted to that use or to another compatible use. (2) Where the improvement does not lend itself to more than one use, the Commission will decide if that use is incompatible with the surrounding area. If it is incompatible, an amortization period will be applied to that property. If the use is compatible, the Land Use Plan Map will be changed to accommodate the existing use but not to allow intensification of the use.

Definitions of Land Use and Roadway Categories

Single-Family Residential: includes one dwelling unit on each lot and uses requiring permits such as churches and private schools which generally locate in residential areas and serve them.

Specific areas may be zoned for addition of second units or modification of single-family houses to duplexes where they would be compatible with neighborhood character and not increase traffic and parking problems.

The density in single-family areas will range from one to seven dwellings an acre, but may rise to a maximum of 14 units in zones where second units are permitted.

Major Institution/Single-Family Residential: single-family areas where the occupancy of the units is significantly or totally limited to individuals or families or both affiliated with the institution.

Multiple-Family Residential: the permitted number of housing units will vary by area, depending on existing land use, proximity to major streets and public transit, distance to shopping, and environmental problems of the area. Densities will range from 10 to 45 units per acre. Density should be on the lower end of the multiple-family scale next to single-family residential areas. Higher densities may be allowed where measurable community benefit is to be derived, where services and facilities are available to serve the increased density, and where the effect of the increased density will be compatible with the Plan.

Employment Program 4 recommends that the zoning ordinance be revised to prevent generally further encroachment of offices in multiple-family zones.

Major Institution/Multiple-Family Residential: multiple-family areas where the occupancy of the units is significantly limited to individuals and families or both affiliated with the institution.

This designation has been applied to the Stanford-owned Peter Coutts Hill area in anticipation of a development consistent with the low/moderate income housing objectives of the 1972 rezoning.

Neighborhood Commercial: includes shopping centers with off-street parking, or a cluster of street-front stores that serve the immediate neighborhood. These areas often include supermarkets, bakeries, delicatessens, drugstores, variety stores, restaurants, barber shops, beauty shops, laundromats, dry cleaners, and hardware stores. Existing neighborhood commercial centers shown on the Plan Map are Alma Plaza, Charleston Center, Edgewood Shopping Center, and Midtown. As described in Employment Program 5, the neighborhood commercial areas designated for El Camino Real and El Camino Way are intended to include such uses plus a limited number of service commercial uses which would serve nearby neighborhoods and be compatible with them and a beautified El Camino.

Regional/Community Commercial: larger shopping centers and shopping districts that have a variety and depth of goods and services usually not available in the neighborhood shopping areas. They rely on large trade areas and may include department stores, apparel shops, sporting goods stores, toy stores, book shops, plant stores, fabric stores, appliance dealers, furniture stores, restaurants, theaters, and non-retail services such as offices, real estate agents, banks, and insurance brokers. Regional/community commercial areas shown on the Plan Map are Stanford Shopping Center, Downtown (University Avenue), California Avenue, and Town and Country Village.

Service Commercial: facilities that provide city-wide and regional services that rely on customers making trips by car and do not necessarily benefit from being located in high-volume pedestrian areas such as shopping centers and Downtown. Stores locating in these areas include dealers in new and used automobiles, automobile repair and service,

motels, veterinarians and small animal hospitals, lumber yards and building supply dealers, and fast-food and other restaurants. In almost all cases, these require good automobile access and service drives so that customers can safely and conveniently load and unload without impeding traffic. Service commercial areas shown on the Plan Map are along El Camino, San Antonio, south of Downtown, and on Embarcadero east of Bayshore Freeway.

Research/Office Park: office, research, and manufacturing establishments whose operations are clean and quiet and do not conflict with any adjacent residential uses. Stanford Industrial Park is an example of this type of land use.

Light Industrial: wholesale facilities and storage warehouses and the manufacturing, processing, repairing, or packaging of goods. Emission of fumes, noise, smoke or other pollutants or nuisances are strictly controlled. The area south of Oregon Avenue between El Camino and Alma and the San Antonio Road industrial area are designated light industrial on the Plan Map. Palo Alto's zoning ordinance does not contain provisions for factories and the Land Use Plan Map does not contain a heavy industrial classification.

City or County Conservation Land: open space lands whose purpose is primarily the preservation and enhancement of the present natural state of the lands and their flora and fauna, and in which only compatible recreation and educational activities are allowed.

Public Parks: open space lands whose purpose is primarily active recreation and whose character is essentially urban, which have been planted with non-indigenous landscaping, and which require concerted effort to maintain the recreational facilities and landscaping in a usable fashion.

School District Lands: properties owned by public school districts or leased to them or by them and used for educational, recreational, or other non-commercial, non-industrial purposes.

Streamside Open Space: the corridor of riparian vegetation along a natural stream. The corridor may vary in width up to 200 feet. Hiking, biking, and riding trails may be developed.

Open Space . . . Controlled Development: land having all the characteristics of open space but upon which some development can be allowed, providing that the open space amenities are retained.

The City or County Conservation Land, Public Parks, School District Lands, Streamside Open Space, and Open Space . . . Controlled Development definitions are taken directly from the adopted Open Space Element, Appendix F.

Major Institution/Special Facilities: specialized public and private buildings and lands. Examples are Stanford University, the Veterans Administration Hospital, and public buildings and sites such as City Hall, the Cultural Center, the Municipal Service Center, libraries, and fire stations.

Local Streets: local streets provide access to adjacent properties only. Not all local streets are shown on the Plan Map.

Collector Streets: collector streets carry traffic within an area to arterials and provide access to adjacent properties and local streets.

Arterial Streets: arterial streets are designed to serve through-traffic and take traffic to and from collectors and expressways, but also provide access to adjacent properties.

Expressways: expressways are devoted solely to the task of traffic movement, but may cross arterials and collectors at intersections controlled by traffic signals or stop signs. Expressways do not serve adjacent properties directly.

Freeways: freeways are devoted solely to the task of traffic movement, and connect with streets at interchanges. There is no access from adjoining properties.

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Palo Alto Land Use Plan



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Palo Alto Comprehensive Plan



1977 - 1990

Introduction

This is an unofficial summary of the Comprehensive Plan adopted by the Palo Alto City Council on November 29, 1976 after extensive public participation. Only a few of the 47 important policies and 140 programs that make up the adopted Plan have been included because of limited space. A copy of the complete Plan including any amendments to the text and Plan map is available at the Palo Alto City Hall, 250 Hamilton Avenue.

The Plan is an official policy framework for guiding decisions both on private projects and on City capital expenditures. It is for the approximately 25 square miles within the City limits as well as unincorporated areas including Stanford University lands in Santa Clara County and several parcels in the Baylands and upper foothills.



Palo Alto is located 35 miles from San Francisco and 15 miles from San Jose.

Process

The Plan results from a process of selecting a series of planning alternatives. Public hearings, development of information, and analysis of impacts upon the City resulting from implementation of these alternatives were all part of this process.

This Comprehensive Plan was the subject of formal Planning Commission public hearings and the subsequent recommendations of the Commission were reviewed by the City Council at public meetings. Comments expressed in writing and at the meetings influenced both bodies in reaching decisions on the Plan.

Although this Plan has now been formally adopted, the Municipal Code requires the Planning Commission to review the Plan annually and recommend to the Council any modifications which the Commission considers necessary in the light of any change in conditions.

The Intent of the Plan

State law provides for and City Code requires a comprehensive plan that looks at all aspects of physical growth. Attitudes toward growth, environmental protection, and social responsibility have changed markedly since Palo Alto's last Comprehensive Plan was prepared in 1963.

This Plan for the years between 1977 and 1990 must still provide guidance in solving today's problems even though it is long-range and comprehensive. Some proposals can be carried out now; others may be 15 or 20 years in the future. In the case of transit, this Plan can only recommend directions because technology and public acceptance are likely to change rapidly in the next few years.

The Plan includes all physical elements of the City that require large land areas, for example, land use, traffic circulation, and school and park facilities.

Several subjects of City-wide concern are not addressed in the Plan. Social programs as such are not included, although nearly all proposals have social implications. Thus, child care, crime prevention, and recreation programs are not included. Although problems of energy conservation and water conservation are not included in this document, it is intended that these subjects be addressed in the near future.

Some major decisions affecting land use have been made: the foothills and Baylands are to remain open. The remainder of the City is nearly built-up. However, there are strong economic forces that could bring major changes.

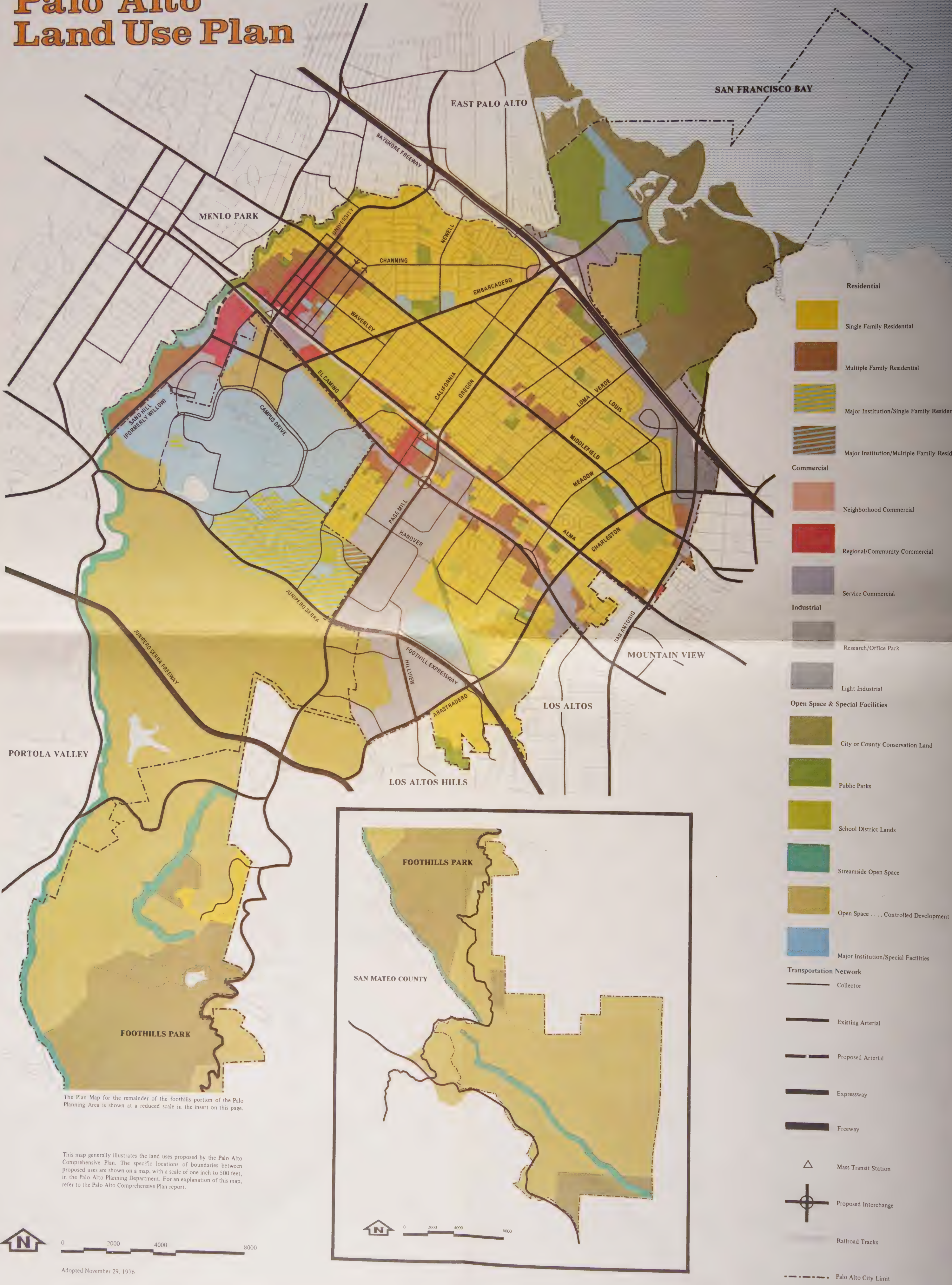
If the City takes no action to change present trends and policies, these are some of the things we can expect by 1990:

- Housing units will increase 7.6 per cent from 23,800 in 1974 to 25,600 units. Single-family units will decrease by 200 to 15,300 because of demolitions resulting in apartment construction. Apartment units will increase by 2,000 to 10,300 in 1990. Most new households will be childless, and housing costs in Palo Alto will rise faster than in the rest of the Bay Area.
- Palo Alto employment will increase 36.7 per cent from 59,600 in 1974 to 81,500, led by a gain of 8200 in the electronics industry. About 68,000 of these workers will commute into Palo Alto, mainly from the south.
- If employment trends and travel habits do not change, the number of automobile trips in the City will be 40 per cent greater than in 1974.

There are five major proposals in this Plan:

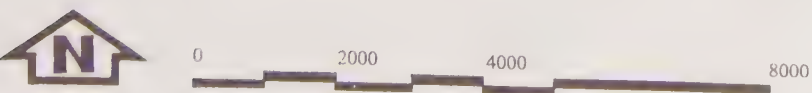
1. Maintain the general low density character of existing single family areas.
2. Slow down employment growth.
3. Maintain existing housing and provide some new housing for low-, moderate-, and middle-income households.
4. Reduce the growth of auto traffic.
5. Change the appearance and function of El Camino Real.

Palo Alto Land Use Plan



The Plan Map for the remainder of the foothills portion of the Palo Alto Planning Area is shown at a reduced scale in the insert on this page.

This map generally illustrates the land uses proposed by the Palo Alto Comprehensive Plan. The specific locations of boundaries between proposed uses are shown on a map, with a scale of one inch to 500 feet, in the Palo Alto Planning Department. For an explanation of this map, refer to the Palo Alto Comprehensive Plan report.



Adopted November 29, 1976



Land Use

The Land Use Plan shows the City's intentions for the development, redevelopment, growth, and preservation of public and private properties within the Palo Alto planning area through 1990.

Proposed land uses and streets echo existing patterns. This is because the flatlands of Palo Alto are largely built up. The City's decision to keep the foothills and Baylands predominantly open is reflected in the Open Space Element. Boundaries between land uses are quite specific and usually follow present property lines.

Objectives, Policies, and Programs

The Land Use Plan brings together all of the map-related objectives, policies, and programs in other sections of the Comprehensive Plan. However, the Plan Map cannot reflect all the policies and programs which will influence allowable land uses. These policies and programs are assumed in the definitions of commercial, research/office, and industrial land uses.

Implementation of the Plan Map

The Comprehensive Plan is an important legal document. No subdivision or rezoning will be approved unless it is in harmony with the adopted Plan, which includes the Plan Map. It is expected that the Plan will become the basis for a new zoning ordinance for properties in Palo Alto. For each land use category designated on the map, usually more than one zoning designation will be possible.

Definitions of Land Use Categories

Single-Family Residential: includes one dwelling unit on each lot and uses requiring permits such as churches and private schools. Specific areas may be zoned for addition of second units or duplexes. Density ranges from one to seven dwellings an acre, but may rise to a maximum of 14 where second units are permitted.

Major Institution/Single-Family Residential: single-family areas where the occupancy of the units is significantly limited to persons affiliated with the institution.

Multiple-Family Residential: permitted number of units varies by area, depending on existing land use, proximity to major streets and public transit, distance to shopping, and environmental considerations. Densities range from 10 to 45 units an acre. Density should be on the lower end of the scale next to single-family residential areas. Higher densities may be allowed where measurable community benefit is to be derived and where conditions permit.

Major Institution/Multiple-Family Residential: multiple-family

areas where occupancy is significantly limited to persons affiliated with the institution. Includes the Stanford-owned Peter Coutts Hill area.

Neighborhood Commercial: includes shopping centers with off-street parking, or a cluster of street-front stores that serve the immediate neighborhood. Examples are Alma Plaza, Charleston Center, Edgewood Shopping Center, and Midtown.

Regional/Community Commercial: larger shopping centers and shopping districts that have a variety and depth of goods and services usually not available in the neighborhood shopping center. They rely on large trade areas. These are Stanford Shopping Center, Downtown, California Avenue, and Town and Country Village.

Service Commercial: facilities that provide city-wide and commercial services that rely on motorists and do not necessarily benefit from being located in high-volume pedestrian areas. Almost all require good automobile access and service drives. These are along El Camino, San Antonio, south of Downtown, and on Embarcadero east of Bayshore Freeway.

Research/Office Park: office, research, and manufacturing establishments whose operations are clean and quiet and do not conflict with any adjacent residential uses. Stanford Industrial Park is an example.

Light Industrial: wholesale facilities and storage warehouses and the manufacturing, processing, repairing, or packaging of goods. Air and noise pollution emissions and nuisances are strictly controlled. The area south of Oregon Avenue between El Camino and Alma and the San Antonio Road industrial area are designated light industrial. There is no area planned for heavy industry in Palo Alto.

City or County Conservation Land: open space lands whose primary purpose is to preserve the land, its plants, and animals and in which only compatible recreational and educational activities are allowed.

Public Parks: urban open space land primarily used for active recreation. The land has been planted with non-indigenous landscaping and requires concerted effort to maintain in a usable fashion.

School District Lands: properties owned by public school districts or leased to them or by them and used for educational, recreational, or other non-commercial, non-industrial purposes.

Streamside Open Space: the corridor of streamside vegetation which may vary in width up to 200 feet.

Open Space . . . Controlled Development: land with all the characteristics of open space but upon which some development can be allowed, providing that the open space amenities are retained.

Major Institution/Special Facilities: specialized public and private buildings and lands such as Stanford University and the City's Cultural Center.

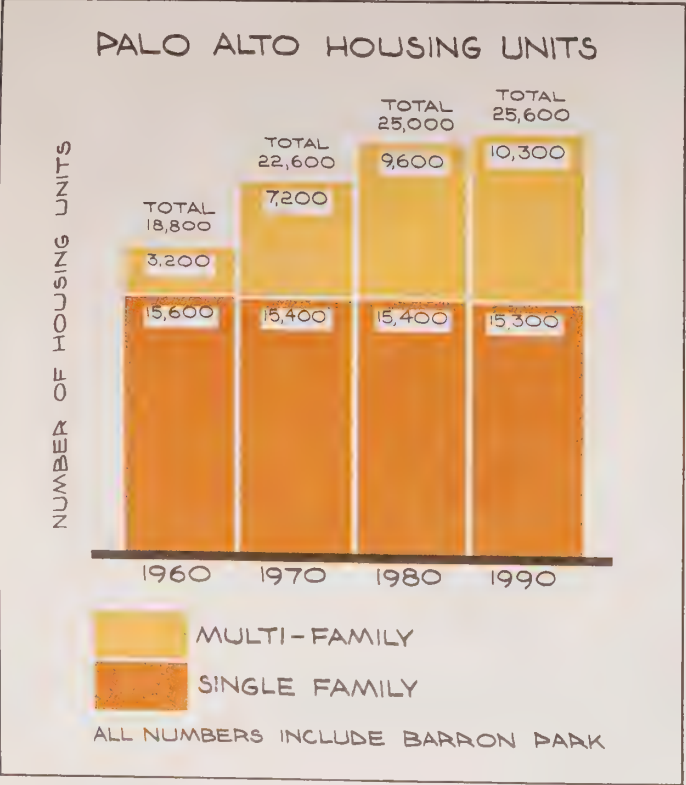
Housing

The goal of keeping Palo Alto a fine residential community makes housing one of the most important factors considered in the Comprehensive Plan.

Palo Alto's Housing Objectives

It is important to maintain the character and physical quality of residential neighborhoods and to maintain a diversity of housing opportunities. "Diversity" means a variety of housing types and styles, a mixture of ownership and rental housing, and a full range of housing costs.

More multi-family housing won't necessarily mean more rental housing because of the recent popularity of owner-occupied condominiums. These are likely to continue to be a large part of new multi-family units in Palo Alto.



If current development patterns continue in Palo Alto, an increase in the number of housing units is projected based on the expected addition of new multi-family units. New single-family construction will only replace demolished single-family units in 1980 and will fall short of replacement in 1990.

The Housing Supply

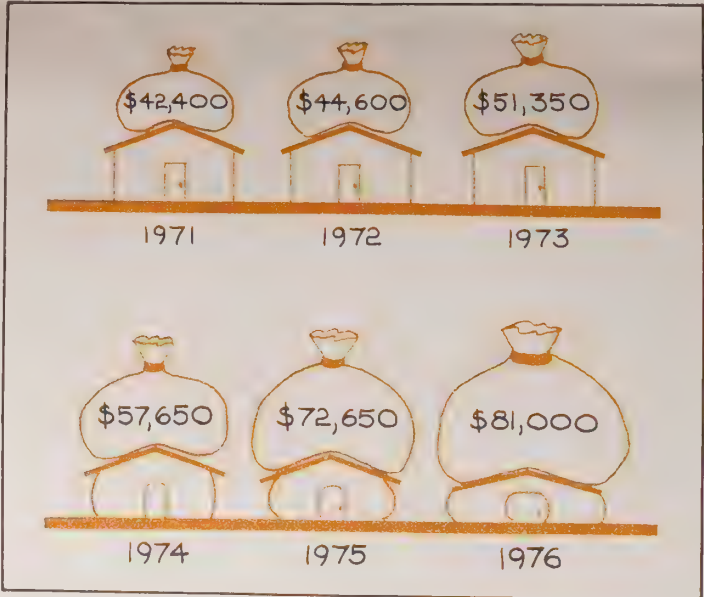
In 1975, Palo Alto's 23,800 housing units made up about one-sixth of the housing on the Midpeninsula between Redwood City and Sunnyvale. In addition, Stanford University provides space for about 7100 students and has 700 campus units for faculty and staff. These units are not available on the open market.

Two-thirds of Palo Alto's units are single-family homes, but about 20 per cent of them are rented. Owners occupy just over one-half of all the housing units in the City. Almost 40 per cent of Palo Alto's housing was built before 1950 and another 40 per cent between 1950 and 1960. Palo Alto has built only about 20 per cent of its housing since 1960.

Housing in Palo Alto is expensive and hard to find because the City is a desirable place to live, there are many jobs, and there is little land available for new housing development.

Looking to 1990

Only middle-income and high-income households will be able to rent or buy new multi-family units, unless efforts are made to make some units available to low- or moderate-income households. New single-family units will be so expensive that only high-income households will be able to afford them. At the same time, the City's supply of lower cost housing will be diminished through removals to make way for the new construction.

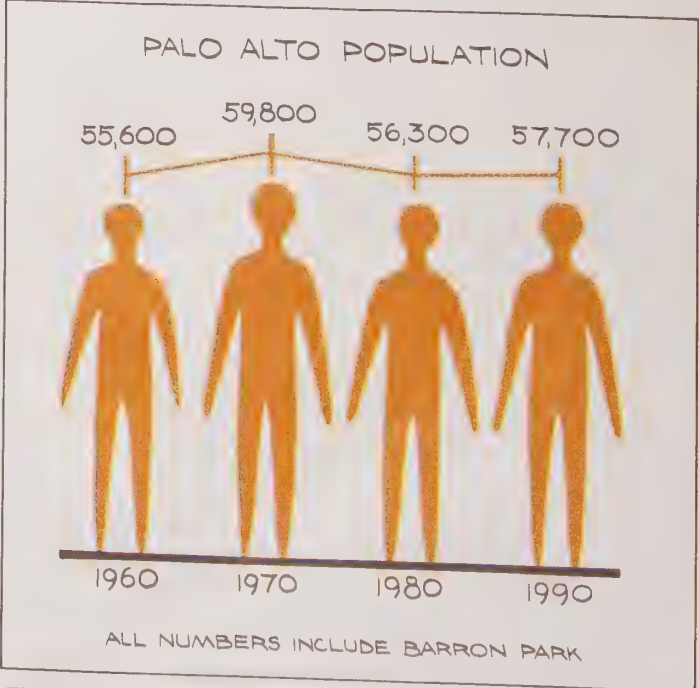


The average of the estimated market values of three typical single-family homes in Palo Alto increased 75 per cent from April, 1971 to April, 1976, according to the Northern California Real Estate Report.

The People

Palo Alto's population is rising in average age. Persons 60 years and older make up almost one-seventh of the City's population, a higher proportion than the national average. The highest concentration of seniors in Santa Clara County is found in Downtown Palo Alto. Children under 18 made up only 28 per cent of Palo Alto's population in 1970 as compared to the county's 37 per cent.

Ethnic minorities make up about 13 per cent of the City's population. People of Spanish language and surname account for almost half of the minority population. Asian-Americans are a little more than one-third of the minority population and about four per cent of the total population. Blacks are one-fifth of the minority population and less than three per cent of the total population, and other minority groups make up less than one per cent of the total population.



The City's population is likely to remain relatively constant even though the number of households will increase. This results from the downward trend in the number of persons per household.

Housing Needs, Policies, and Programs

Maintaining Palo Alto's residential qualities is uppermost in most people's minds. Because Palo Alto is a fine residential community now, some Palo Altans see no need for any further City involvement in housing. But staying the same often requires constant watchfulness so that unwanted change will not occur.

Neighborhoods

Housing Policy 1: *Maintain the general low-density character of existing single-family areas.*
Housing Policy 2: *Preserve older single-family homes and small apartment buildings.*

Housing Program 1: In areas adjacent to Downtown shopping areas, adjust allowable densities.

Bands of decreasing density surrounding Downtown will provide a transition from the commercial area to single-family zones. The highest density will adjoin the Downtown commercial district, decreasing to the lowest density next to single-family areas.

Housing Quality

Certainly not all older houses in Palo Alto need rehabilitation, but there are areas that will begin to turn downward unless the normal processes of deterioration are reversed. These areas need rehabilitation now, before major problems arise.

Housing Program 8: Provide rehabilitation assistance to designated areas of Palo Alto.

The rehabilitation assistance program, established in Palo Alto in 1974, provides low-interest loans or no-interest hardship loans using federal Community Development Block Grant money and Palo Alto funds. It concentrates on residential areas to upgrade neighborhoods and to promote long-term housing conservation. The Pepper-West Meadow, and College Terrace neighborhoods are the first program areas.

The Cost of Housing

State and federal policies call for communities to provide housing for all income groups, and Palo Alto tried to do this in the 1970s. But, housing costs continue to escalate.

When the price of housing goes up, large segments of the population gradually become unable to compete for housing in Palo Alto including middle- and moderate-income households, particularly those with children; seniors on limited incomes; and households with low-paying jobs or on public assistance.

In 1970, 3600 Palo Alto households, over 15 per cent of the total, fit the federal standard for "lower income" and were living in inadequate housing conditions.

Seniors are particularly susceptible to the hardships generated by rapidly inflating housing costs. Although most seniors now living in Palo Alto would like to stay, many are finding the expenses of increased rent or higher property taxes more and more difficult to sustain. This is not surprising considering that about 2000 seniors, or one-quarter of the total senior population of Palo Alto, have annual incomes of less than \$3000. One out of four seniors rents, and over one-quarter of these pay more than 40 per cent of their incomes for rent.

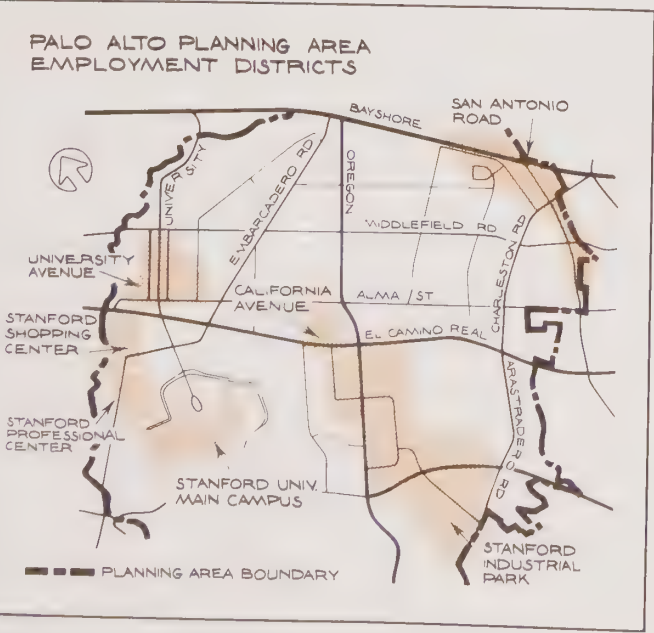
Employment

Palo Alto has become one of the major employment centers of the Bay Area partly because the City is close to Stanford University and is identified with it, as well as because of outstanding educational and research institutions, fine residential areas, and outstanding municipal services.

Most of Palo Alto's commercial and industrial districts are characterized by well-designed buildings and low-density development patterns. The City's businesses, which created the jobs, have also enabled Palo Alto's residents to enjoy one of the highest standards of city services in the nation at a very low municipal tax rate. This is largely because of the property taxes, sales taxes, and utilities revenues paid by these businesses. There probably is no other highly desirable residential community where the homeowner contributes such a small share of the city budget. Palo Altans have paid a price, however, in terms of traffic nuisance, air and noise pollution, ever-increasing capital improvements costs, and higher housing costs resulting from exceptionally strong demand—all of which have been intensified by the growth in the number of jobs.

Existing Conditions and Trends

The forecast is that employment growth in Palo Alto will be concentrated in service and manufacturing. If Palo Alto's current development policies continue, more than two-thirds of the employment increase between 1970 and 1980 will occur in the City's two light manufacturing districts: the Stanford Industrial Park and the area around San Antonio Road. The smaller increase expected between 1980 and 1990 would be more evenly distributed because of the diminishing supply of available zoned land.



Although land shortage will slow employment gains the 1980s, development of industrial sites following current practices could result in 38,000 manufacturing jobs in 1980 and ultimately 40,900 in 1990 versus 23,200 manufacturing jobs in 1970. Beyond 1990 land shortages will severely limit employment growth.

A critical impact of employment is the commute pattern of persons employed in Palo Alto and the effects on traffic congestion. As the map illustrates, more than 40,000 workers commute to Palo Alto. Most who work in Palo Alto travel to

Local Actions

Most of Palo Alto's housing activities have been City programs to make federal assistance programs more effective here. Local as well as state and federal housing assistance programs are necessary to provide housing opportunities for the full range of income levels which Palo Alto wishes to continue to house.

Housing Program 15: Continue the Land Bank Program for purchasing parcels for housing development for low- and moderate-income families and seniors.

The Land Bank Program provides for City purchase of sites for resale to developers interested in providing lower-cost housing. The construction of this housing would be unlikely without both a Land Bank Program to make the land available and federal assistance to lower housing costs.



Lytton Gardens, a 220-unit federally-assisted housing development for seniors of low and moderate income, was built on the first site purchased for the Land Bank.

City staff has negotiated the provision of lower-cost units under the 1973 policy that new housing developments of 20 or more units should include 20 per cent to 40 per cent low- and moderate-income units, depending on the size or type of the development. These units have been about 13 per cent of the total units in developments of 20 units or more, and the price has been around \$30,000—too high to reach low-income households.

Housing Program 18: In new multiple housing developments of 10 or more units, not less than 10 per cent of the units should be provided at below market rates to moderate- and middle-income families.

Open Choice

Housing Policy 11: *Work toward the elimination of racial and other barriers that prevent free choice in housing.*

Programs to accomplish this policy are:

Housing Program 22: Seek better state and federal enforcement of fair housing laws.

Housing Program 23: Continue to contract with such groups as Midpeninsula Citizens for Fair Housing to provide fair housing services.

Housing Program 24: Continue the City-supported Rental Housing Mediation Task Force, a program of the Human Relations Commission, to prevent or remedy conditions which lead to problems between landlords and tenants.

Housing Program 25: Continue the efforts of the Human Relations Commission to combat discrimination in rental housing.

work in private automobiles at peak periods. These commuters contribute to congestion on the City's arterial streets and on some residential streets.



Between 1965 and 1975, the number of workers commuting into Palo Alto has more than doubled, and is now about 40,000. Most of these persons commute into Palo Alto from the south and this trend is expected to continue.

Objectives

Palo Altans want to preserve their fine residential community while maintaining the necessary commercial and industrial activities that help support the outstanding City facilities and services.

Objectives that are aimed at preserving the residential neighborhoods from increased traffic while maintaining the success and low density of Palo Alto's existing commercial and industrial districts are:

- Reduce employment potential.
- Low employment densities should be maintained where feasible.
- Existing businesses should be kept healthy and attractive.
- Industrial and commercial uses in Palo Alto should be clean, quiet, and otherwise compatible with the residential character of the City.

A major problem for Palo Alto is the appearance and function of the commercial areas along El Camino Real.

- The balance of land uses along El Camino Real should shift from automobile and service commercial toward neighborhood commercial and residential.

Employment Programs

Employment Program 1: Reduce non-residential site coverage limits to correspond to existing development patterns.

This program is primarily intended to reduce the expected employment increase in Palo Alto by determining overall site coverage in each commercial and industrial zone and adjusting permitted site coverage in each zone. This would, in most cases, lower site coverage limits for future development.

Employment Program 4: Revise the zoning ordinance to deter further encroachment of offices in multi-family zones.

This program will help to reduce employment potential, preserve existing housing, and enhance neighborhoods, all Comprehensive Plan policies.

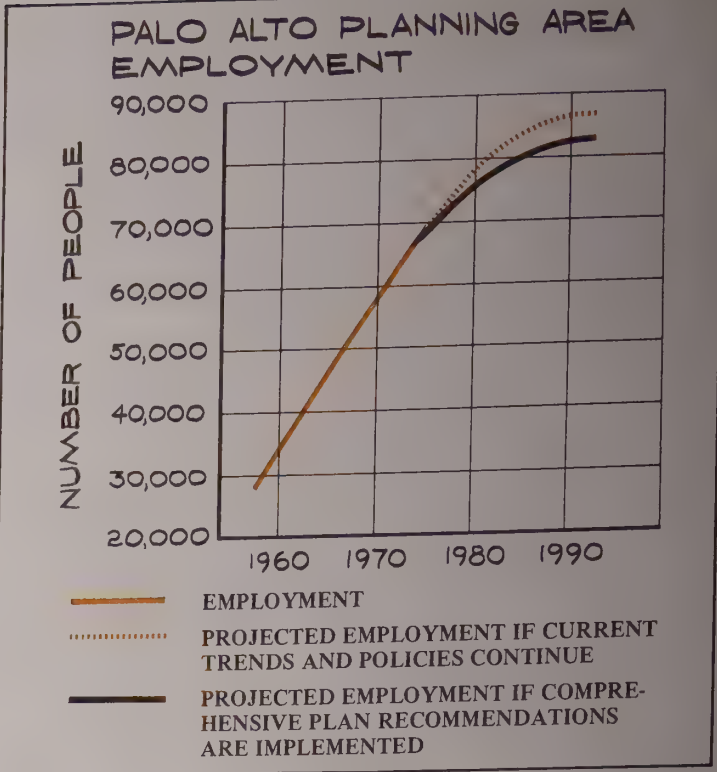
Employment Program 5: A new commercial zone should be defined which combines neighborhood commercial with some service commercial compatible with El Camino frontage and the residential neighborhood behind.

This will encourage and retain supermarkets, drug stores, variety stores, and other businesses along El Camino Real plus a limited number of other businesses that are now only allowed in service commercial zones, but which would serve the adjacent residential neighborhoods.

Impact of Programs on Employment Forecast

It is estimated that the recommended policies and programs would reduce the 1990 Palo Alto employment forecast from 81,500 to 76,700.

Within the entire planning area, the 1990 forecast would change from 86,500 to 81,700.



The recommended employment programs could reduce the expected employment.

Transportation

Objectives

Almost total dependence on the automobile has increased the problems of traffic congestion, air pollution, and noise. Traffic filters through and disturbs residential neighborhoods in Palo Alto to avoid overcrowded arterials. The Plan seeks to encourage alternatives to the single-occupant automobile through programs to be initiated primarily by employers.

- Transportation objectives for Palo Alto are:
- Serve present and future transportation demands safely, efficiently, and reliably.
 - Reduce growth of overall traffic.
 - Reduce peak-hour traffic congestion.
 - Serve the transit-dependent population.
 - Improve the efficient use of the automobile.
 - Protect residential neighborhoods from through traffic.



Streets can be classified according to their function as traffic carriers. Freeways and expressways are devoted to the task of traffic movement. Arterial streets are designed to serve through traffic, but also provide access to adjacent properties. Collector streets carry traffic within an area to arterials and provide access to adjacent properties. Local streets, which are not shown on the map, provide parking and access to adjacent properties.

Existing Conditions and Trends

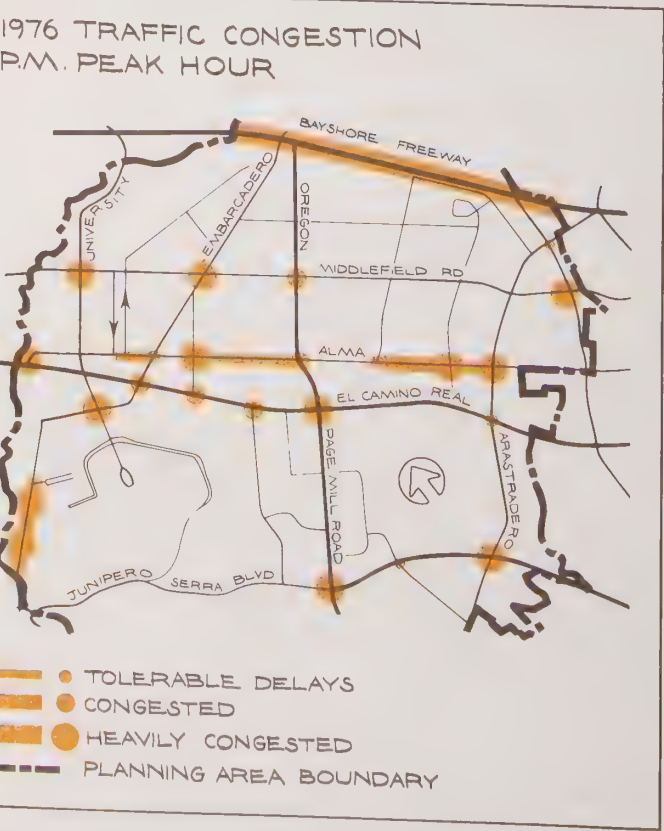
Transit

Sub-regional transit service is provided by the Santa Clara County Transit District (SCTD), the San Mateo County Transit District (Sam Trans), Greyhound, and Southern Pacific.

Parking

Demand for parking in the Downtown and California Avenue retail and office areas consists of short-term shopper parking and long-term employee parking. Parking is more critical Downtown where many cars now park on adjacent residential streets.

If most people go on riding to work in single-occupant cars, the Downtown 1990 deficiency of parking spaces will reach 3900 to 5000 and the California Avenue deficiency of



This map indicates areas that are congested between 5 and 6 p.m., the most congested hour of the day. A congestion map for the morning peak hour would be very much the same.

300 spaces in 1976 will increase to between 1550 and 2150 assuming that present employment trends and current transportation services will continue.

Transportation Needs, Policies, and Programs

Transit

A significant segment of Palo Alto's population—the young, elderly, poor, and disabled—has very limited alternatives to transit. It is estimated that, in 1970, there were in Palo Alto approximately 500 people between the ages of 10 and 15, 5750 people age 65 or over; 3750 people with income below federal poverty levels; and 3700 handicapped individuals. While these groups overlap to some extent, it is evident that many people need improved transit service.

Programs to provide more and better service and more information about it through SCTD include:

Transportation Program 1: Improve service frequency on bus and rail routes when demand warrants.

Transportation Program 2: Institute a compatible fare and transfer arrangement for the use of all public transit systems (BART, Muni, SCTD, and Sam Trans.)

Transportation Program 3: Decrease waiting times at transfer points when demand warrants.

Transportation Program 8: Provide special transportation services for needy senior citizens and handicapped persons.

Supplemental transportation services such as the Project Mobility taxi program should be provided for needy senior citizens and needy handicapped persons who are not able to use the existing bus system.

Transportation Program 9: Provide shuttle service between activity centers.

A shuttle bus service between activity centers like Downtown and Stanford Shopping Center and to and from large employment centers during lunch hours would ease current parking and traffic circulation problems.

Trafficways

Dependence on the private automobile for traveling to work has heavily congested Palo Alto streets, especially during peak hours. Traffic filters through and disturbs residential neighborhoods to avoid the crowded arterials.

Palo Alto is determined to reduce traffic congestion, but not by widening the streets to increase their capacities.

Transportation Policy 4: *Avoid major increases in automobile traffic capacities.*

Transportation Policy 5: *Discourage travel at peak hours.*

Transportation Policy 6: *Increase the number of persons carried per vehicle.*

Transportation Policy 7: *Discourage auto use.*

Two major widenings and capacity increases, a four-lane Willow Road between Santa Cruz Avenue in Menlo Park and El Camino Real and a Page Mill/El Camino interchange are acceptable because they resolve particularly aggravated conditions.

Most of Palo Alto's traffic congestion occurs at peak hours, primarily due to work trips. Flexible work scheduling would decrease peak hour congestion.

Comprehensive Plan programs promote car pools, van pools, and bus pools and encourage free parking for car pools and van pools. Pooling provides the best payoff in congestion relief. It offers a specialized service that is better than buses, can operate without public subsidy, and costs riders relatively little.



Projected 1990 peak hour congestion assumes the current low level of transit service and no increase in trafficway capacities except for extension of Willow Road to El Camino Real.

Housing Needs, Policies, and Programs

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The Cost of Housing

State and federal policies call for communities to provide housing for all income groups, and Palo Alto tried to do this in the 1970s. But, housing costs continue to escalate.

When the price of housing goes up, large segments of the population gradually become unable to compete for housing in Palo Alto including middle- and moderate-income households, particularly those with children; seniors on limited incomes; and households with low-paying jobs or on public assistance.

In 1970, 3600 Palo Alto households, over 15 per cent of the total, fit the federal standard for "lower income" and were living in inadequate housing conditions.

Seniors are particularly susceptible to the hardships generated by rapidly inflating housing costs. Although most seniors now living in Palo Alto would like to stay, many are finding the expenses of increased rent or higher property taxes more and more difficult to sustain. This is not surprising considering that about 2000 seniors, or one-quarter of the total senior population of Palo Alto, have annual incomes of less than \$3000. One out of four seniors rents, and over one-quarter of these pay more than 40 per cent of their incomes for rent.

Local Actions

Most of Palo Alto's housing activities have been City programs to make federal assistance programs more effective here. Local as well as state and federal housing assistance programs are necessary to provide housing opportunities for the full range of income levels which Palo Alto wishes to continue to house.

Housing Program 15: Continue the Land Bank Program for purchasing parcels for housing development for low- and moderate-income families and seniors.

The Land Bank Program provides for City purchase of sites for resale to developers interested in providing lower-cost housing. The construction of this housing would be unlikely without both a Land Bank Program to make the land available and federal assistance to lower housing costs.



Lytton Gardens, a 220-unit federally-assisted housing development for seniors of low and moderate income, was built on the first site purchased for the Land Bank.

City staff has negotiated the provision of lower-cost units under the 1973 policy that new housing developments of 20 or more units should include 20 per cent to 40 per cent low- and moderate-income units, depending on the size or type of the development. These units have been about 13 per cent of the total units in developments of 20 units or more, and the price has been around \$30,000—too high to reach low-income households.

Housing Program 18: In new multiple housing developments of 10 or more units, not less than 10 per cent of the units should be provided at below market rates to moderate- and middle-income families.

Open Choice

Housing Policy 11: *Work toward the elimination of racial and other barriers that prevent free choice in housing.*

Programs to accomplish this policy are:

Housing Program 22: Seek better state and federal enforcement of fair housing laws.

Housing Program 23: Continue to contract with such groups as Midpeninsula Citizens for Fair Housing to provide fair housing services.

Housing Program 24: Continue the City-supported Rental Housing Mediation Task Force, a program of the Human Relations Commission, to prevent or remedy conditions which lead to problems between landlords and tenants.

Housing Program 25: Continue the efforts of the Human Relations Commission to combat discrimination in rental housing.

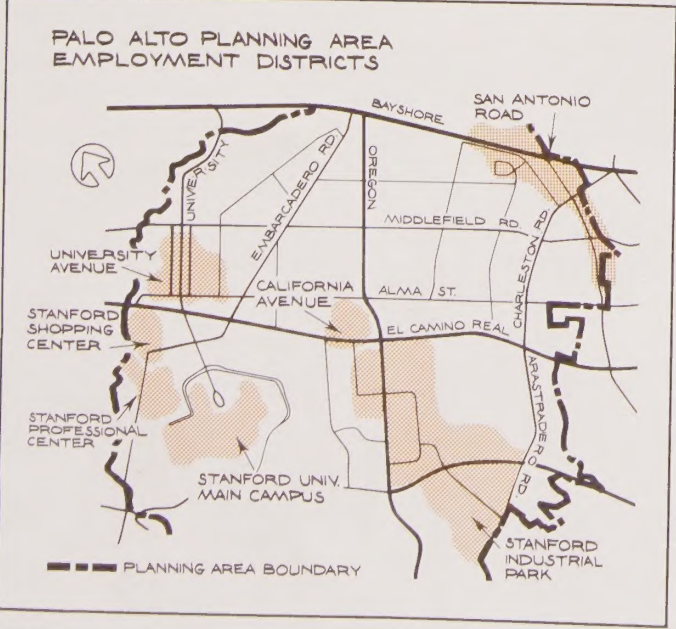
Employment

Palo Alto has become one of the major employment centers of the Bay Area partly because the City is close to Stanford University and is identified with it, as well as because of outstanding educational and research institutions, fine residential areas, and outstanding municipal services.

Most of Palo Alto's commercial and industrial districts are characterized by well-designed buildings and low-density development patterns. The City's businesses, which created the jobs, have also enabled Palo Alto's residents to enjoy one of the highest standards of city services in the nation at a very low municipal tax rate. This is largely because of the property taxes, sales taxes, and utilities revenues paid by these businesses. There probably is no other highly desirable residential community where the homeowner contributes such a small share of the city budget. Palo Altans have paid a price, however, in terms of traffic nuisance, air and noise pollution, ever-increasing capital improvements costs, and higher housing costs resulting from exceptionally strong demand—all of which have been intensified by the growth in the number of jobs.

Existing Conditions and Trends

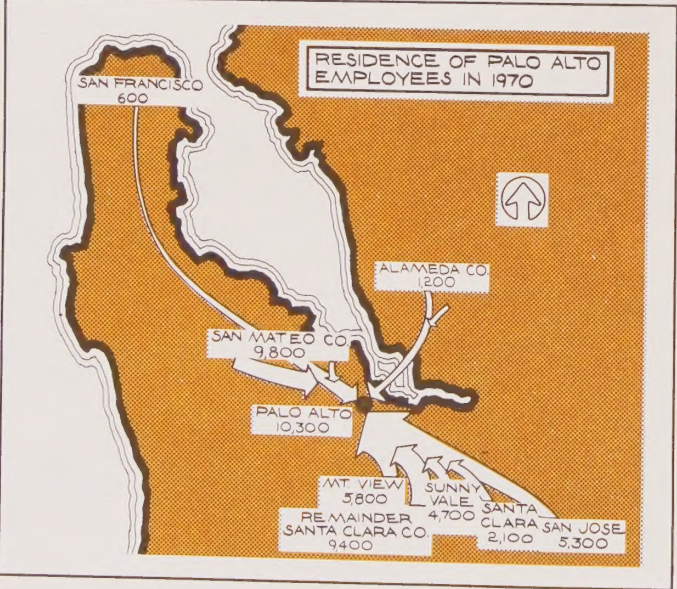
The forecast is that employment growth in Palo Alto will be concentrated in service and manufacturing. If Palo Alto's current development policies continue, more than two-thirds of the employment increase between 1970 and 1980 will occur in the City's two light manufacturing districts: the Stanford Industrial Park and the area around San Antonio Road. The smaller increase expected between 1980 and 1990 would be more evenly distributed because of the diminishing supply of available zoned land.



Although land shortage will slow employment gains the 1980s, development of industrial sites following current practices could result in 38,000 manufacturing jobs in 1980 and ultimately 40,900 in 1990 versus 23,200 manufacturing jobs in 1970. Beyond 1990 land shortages will severely limit employment growth.

A critical impact of employment is the commute pattern of persons employed in Palo Alto and the effects on traffic congestion. As the map illustrates, more than 40,000 workers commute to Palo Alto. Most who work in Palo Alto travel to

work in private automobiles at peak periods. These commuters contribute to congestion on the City's arterial streets and on some residential streets.



Between 1965 and 1975, the number of workers commuting into Palo Alto has more than doubled, and is now about 40,000. Most of these persons commute into Palo Alto from the south and this trend is expected to continue.

Objectives

Palo Altans want to preserve their fine residential community while maintaining the necessary commercial and industrial activities that help support the outstanding City facilities and services.

Objectives that are aimed at preserving the residential neighborhoods from increased traffic while maintaining the success and low density of Palo Alto's existing commercial and industrial districts are:

- Reduce employment potential.
- Low employment densities should be maintained where feasible.
- Existing businesses should be kept healthy and attractive.
- Industrial and commercial uses in Palo Alto should be clean, quiet, and otherwise compatible with the residential character of the City.

A major problem for Palo Alto is the appearance and function of the commercial areas along El Camino Real.

- The balance of land uses along El Camino Real should shift from automobile and service commercial toward neighborhood commercial and residential.

Employment Programs

Employment Program 1: Reduce non-residential site coverage limits to correspond to existing development patterns.

This program is primarily intended to reduce the expected employment increase in Palo Alto by determining overall site coverage in each commercial and industrial zone and adjusting permitted site coverage in each zone. This would, in most cases, lower site coverage limits for future development.

Employment Program 4: Revise the zoning ordinance to deter further encroachment of offices in multi-family zones.

This program will help to reduce employment potential, preserve existing housing, and enhance neighborhoods, all Comprehensive Plan policies.

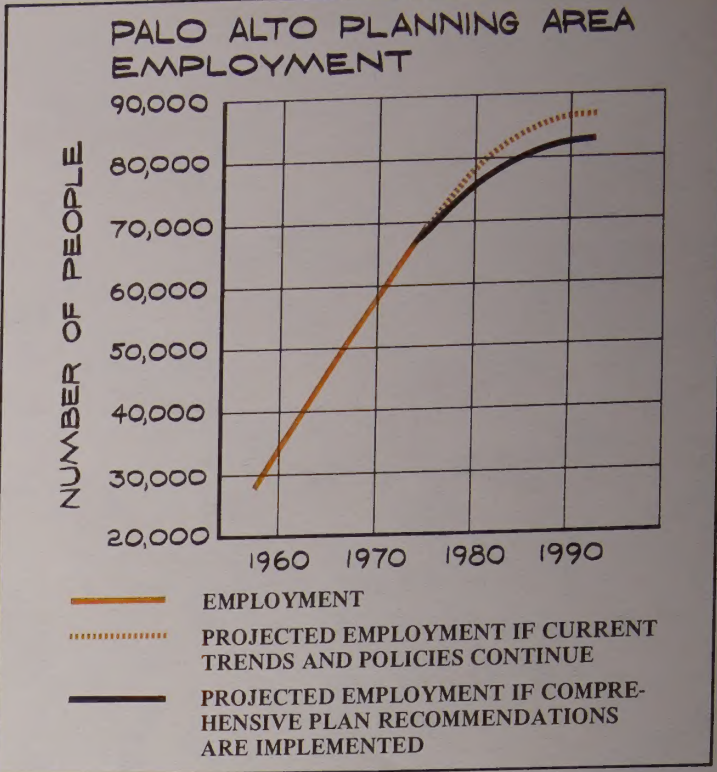
Employment Program 5: A new commercial zone should be defined which combines neighborhood commercial with some service commercial compatible with El Camino frontage and the residential neighborhood behind.

This will encourage and retain supermarkets, drug stores, variety stores, and other businesses along El Camino Real plus a limited number of other businesses that are now only allowed in service commercial zones, but which would serve the adjacent residential neighborhoods.

Impact of Programs on Employment Forecast

It is estimated that the recommended policies and programs would reduce the 1990 Palo Alto employment forecast from 81,500 to 76,700.

Within the entire planning area, the 1990 forecast would change from 86,500 to 81,700.



The recommended employment programs could reduce the expected employment.

Transportation

Objectives

Almost total dependence on the automobile has increased the problems of traffic congestion, air pollution, and noise. Traffic filters through and disturbs residential neighborhoods in Palo Alto to avoid overcrowded arterials. The Plan seeks to encourage alternatives to the single-occupant automobile through programs to be initiated primarily by employers.

Transportation objectives for Palo Alto are:

- Serve present and future transportation demands safely, efficiently, and reliably.
- Reduce growth of overall traffic.
- Reduce peak-hour traffic congestion.
- Serve the transit-dependent population.
- Improve the efficient use of the automobile.
- Protect residential neighborhoods from through traffic.



Streets can be classified according to their function as traffic carriers. Freeways and expressways are devoted to the task of traffic movement. Arterial streets are designed to serve through traffic, but also provide access to adjacent properties. Collector streets carry traffic within an area to arterials and provide access to adjacent properties. Local streets, which are not shown on the map, provide parking and access to adjacent properties.

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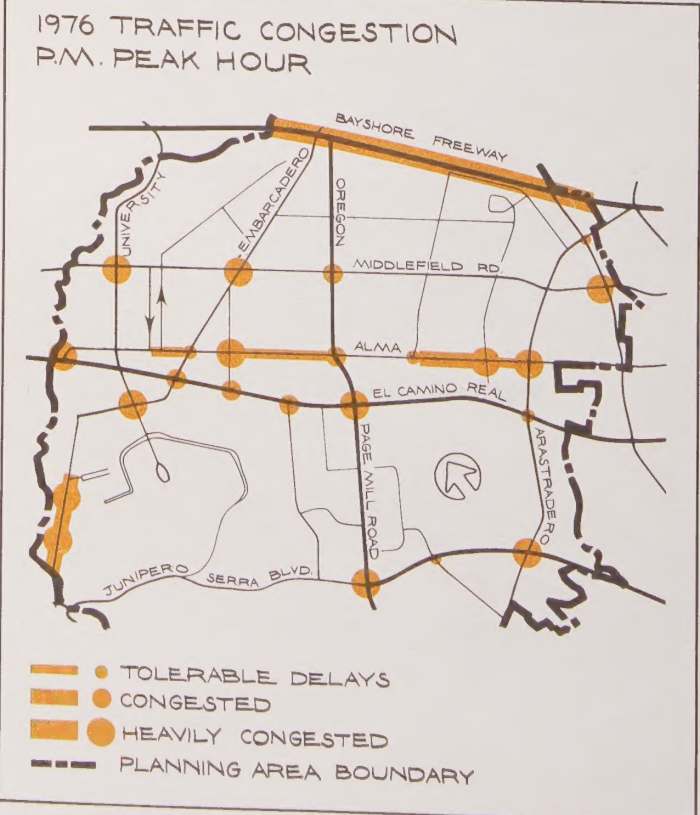
Transit

Sub-regional transit service is provided by the Santa Clara County Transit District (SCCTD), the San Mateo County Transit District (Sam Trans), Greyhound, and Southern Pacific.

Parking

Demand for parking in the Downtown and California Avenue retail and office areas consists of short-term shopper parking and long-term employee parking. Parking is more critical Downtown where many cars now park on adjacent residential streets.

If most people go on riding to work in single-occupant cars, the Downtown 1990 deficiency of parking spaces will reach 3900 to 5000 and the California Avenue deficiency of



This map indicates areas that are congested between 5 and 6 p.m., the most congested hour of the day. A congestion map for the morning peak hour would be very much the same.



Projected 1990 peak hour congestion assumes the current low level of transit service and no increase in traffieways capacities except for extension of Willow Road to El Camino Real.

300 spaces in 1976 will increase to between 1550 and 2150 assuming that present employment trends and current transportation services will continue.

Transportation Needs, Policies, and Programs

Transit

A significant segment of Palo Alto's population—the young, elderly, poor, and disabled—has very limited alternatives to transit. It is estimated that, in 1970, there were in Palo Alto approximately 500 people between the ages of 10 and 15, 5750 people age 65 or over; 3750 people with income below federal poverty levels; and 3700 handicapped individuals. While these groups overlap to some extent, it is evident that many people need improved transit service.

Programs to provide more and better service and more information about it through SCCTD include:

Transportation Program 1: Improve service frequency on bus and rail routes when demand warrants.

Transportation Program 2: Institute a compatible fare and transfer arrangement for the use of all public transit systems (BART, Muni, SCCTD, and Sam Trans.)

Transportation Program 3: Decrease waiting times at transfer points when demand warrants.

Transportation Program 8: Provide special transportation services for needy senior citizens and handicapped persons.

Supplemental transportation services such as the Project Mobility taxi program should be provided for needy senior citizens and needy handicapped persons who are not able to use the existing bus system.

Transportation Program 9: Provide shuttle service between activity centers.

A shuttle bus service between activity centers like Downtown and Stanford Shopping Center and to and from large employment centers during lunch hours would ease current parking and traffic circulation problems.

Trafficways

Dependence on the private automobile for traveling to work has heavily congested Palo Alto streets, especially during peak hours. Traffic filters through and disturbs residential neighborhoods to avoid the crowded arterials.

Palo Alto is determined to reduce traffic congestion, but not by widening the streets to increase their capacities.

Transportation Policy 4: *Avoid major increases in automobile traffic capacities.*

Transportation Policy 5: *Discourage travel at peak hours.*

Transportation Policy 6: *Increase the number of persons carried per vehicle.*

Transportation Policy 7: *Discourage auto use.*

Two major widenings and capacity increases, a four-lane Willow Road between Santa Cruz Avenue in Menlo Park and El Camino Real and a Page Mill/El Camino interchange are acceptable because they resolve particularly aggravated conditions.

Most of Palo Alto's traffic congestion occurs at peak hours, primarily due to work trips. Flexible work scheduling would decrease peak hour congestion.

Comprehensive Plan programs promote car pools, van pools, and bus pools and encourage free parking for car pools and van pools. Pooling provides the best payoff in congestion relief. It offers a specialized service that is better than buses, can operate without public subsidy, and costs riders relatively little.

Bicycle Routes

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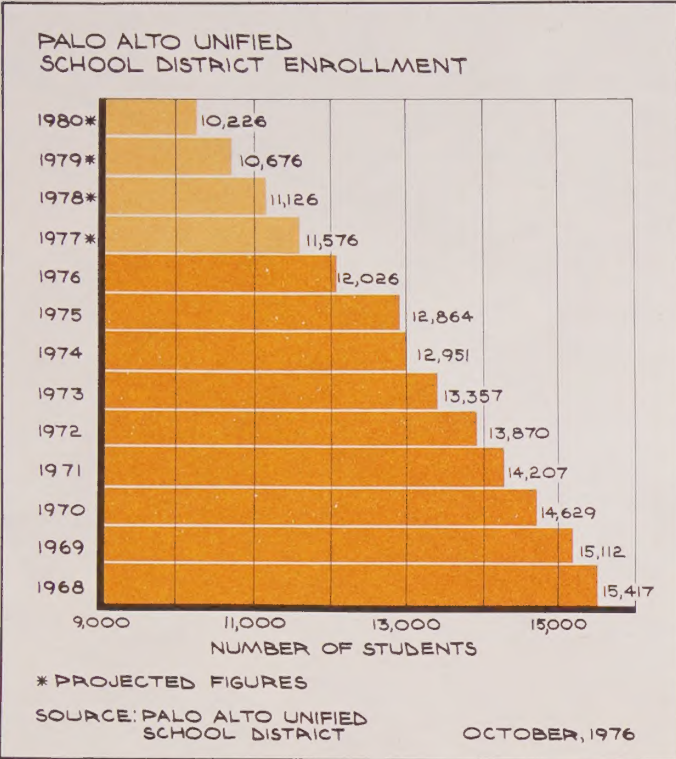
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Improving the quality of Palo Alto's business districts will depend on setting standards for new development appropriate to each district and enacting regulations that will gradually bring existing development into conformity. Conflicts are evident between the demand for automobile space and the human desire for safe, pleasant, and short walking distances and visual enclosure.

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Despite major shopping center competition since 1955, Downtown has maintained its identity and urban character.

Functional and visual problems include through traffic on University Avenue, many obsolescent buildings, and some inefficient mixtures of activities such as the banks and offices that break up retail frontage. Continuous retail frontage should be fostered and maintained if the Downtown retail district is to retain its vitality.

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Environmental Resources

Palo Alto's Open Space Element, adopted in 1972 and revised in 1973, is included as a part of the Comprehensive Plan.

Conservation

Conservation is the wise management of natural and man-made resources to assure their continued availability for use, appreciation, and enjoyment.

The objective of the conservation plan is to preserve and enhance the natural environment consistent with human needs. Excessive water runoff from the foothills must be avoided. Erosion of the soil must be minimized. Fire hazards in the foothills must be reduced. Restoration of water to the underground reservoirs must be increased. Prevention of damage to structures must be achieved with the least possible alteration of the natural ecology. Enhancement of the aesthetic environment must be consistent with human recreation needs and the preservation of wildlife habitat. The quality of air and water must be improved by providing pollution-free areas for percolation into the water table and healthy vegetation for photosynthesis.



Palo Alto's Baylands are a valuable scenic and natural resource. Within Palo Alto, most of the Baylands with open space potential are owned by the City and dedicated for park, conservation, and other open space purposes.

Environmental Resources Policy 3: *Encourage the re-use of treated water waste.*

Two programs will carry out this policy:

Environmental Resources Program 5: Inject treated water underground to reduce land subsidence.

Environmental Resources Program 6: Use treated water for irrigation.

Noise

Noise is a part of modern society. People can tolerate or ignore a certain amount of noise but adverse effects including outright hearing impairment, and other dangers to health are present in many exposures to noise.

The objective of this section of the Plan and Palo Alto's continuing Noise Control Program is to reduce noise which affects humans adversely.

Major sources of traffic noise are streets with high volume, high speed, a large number of traffic controls, or many trucks, buses, and other loud vehicles. Southern Pacific trains are another major source of noise.

Environmental Resources Program 14: Provide City enforcement of state muffler and exhaust system regulations.

In 1972, Palo Alto adopted a noise ordinance which has reduced the amount of noise through City enforcement of State motor vehicle regulations and control of non-vehicular noises.

Environmental Resources Policy 6: *Non-vehicular noise sources in Palo Alto should meet City noise ordinance regulations.*

The noise ordinance is primarily enforced by police officers. Most noise complaints about industry are made by residents of nearby areas when machinery runs during the evening. Engineering modifications to reduce the noise usually solve these problems.

Residential sources causing frequent problems are amplified music, parties, barking dogs, and power equipment. Noise ordinance controls apply to each of these disturbances.

Air Quality

Air pollutants are those substances found in the atmosphere which exceed naturally occurring quantities and are undesirable or harmful in some way. Many kinds of pollutants, including particles, mists, and gases have been identified. Most human activities cause some air pollution.

Environmental Resources Policy 9: *Mitigate impact of air quality problems due to stationary and vehicular sources.*

While major efforts to reduce air pollution focus on regional, state, and national agencies and programs, there is much that Palo Alto can do to reduce the amount of air pollution created and the negative effects of pollutants.

Environmental Resources Program 23: Review proposed projects to reduce negative air quality impacts.

Environmental Resources Program 26: In reviewing and granting building permits and in approving rezonings and subdivisions, the City should encourage builders and developers to provide improvements that will reduce the number of cars occupied by only one person. These improvements could include preferential car pool parking, bicycle storage, bus stop shelters, and substitution of landscaping for some required parking spaces.

El Camino will change only to the degree that the City takes positive actions and provides inducements to the private sector for change. Landscaped setbacks, much stronger controls of sign sizes, lighting, colors and screening of parking will help make El Camino a more attractive part of Palo Alto. These controls should be applied on a schedule that will eliminate out-of-character development within a reasonable length of time.

More significant changes in the strip will probably be brought about by the land use changes proposed in this Plan. The City encourages neighborhood commercial use, rather than regional commercial use, for El Camino.

Seismic Safety and General Safety

Seismic safety hazards include fault ruptures of the earth's surface, ground shaking, ground failures including mudslides, landslides, liquefaction, and slope instability, and the effects of earthquake-induced waves.

General safety involves the protection of the community from geological hazards, floods, and fires. Safety hazards such as building collapse, water, gas, sewer, and electric line damage; communications disruption; and fire or explosion potential are included.

The objectives are to reduce potential injury and loss of life and to lessen possible property damage.

Fault movement causing rupture of the ground surface is the most direct hazard to man-made structures. The last major earthquake on the San Andreas fault affecting Palo Alto occurred in 1906.



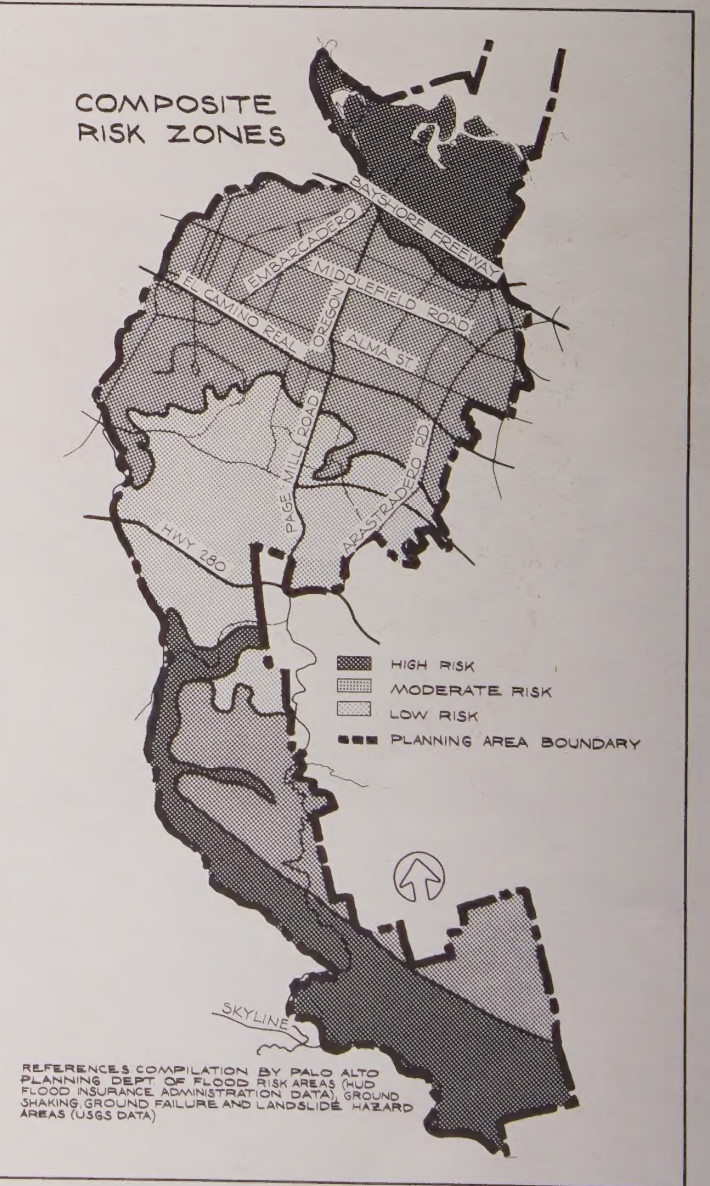
The 1906 earthquake caused extensive damage in Palo Alto. The photograph shows University Avenue looking easterly from the Circle.

Environmental Resources Policy 10: *Measures to lessen risk to human life and property should focus upon identified areas of population concentration and be keyed to areas of greatest natural hazard and areas of known or suspected structural hazard.*

Environmental Resources Program 29: The City should have a structural engineer inspect and evaluate all high-occupancy buildings and all buildings of more than two stories. City codes should be reviewed to ensure that a mechanism exists to require that public safety deficiencies are corrected by those responsible for the building.

An earthquake-proof building does not exist, but engineers have recently expanded their knowledge of the response of structures to stress. Lives are most threatened by hazards from damage to or collapse of structures. Continued staff monitoring of all plans and construction is a vital part of enforcement of revised codes.

There are many inexpensive measures that can be taken to improve the safety of hazardous buildings. Falling debris is a major hazard during and after an earthquake. It is recommended that the program be carried out in phases.



Fault line areas have the greatest risk for man-made structures. High risk is also associated with Bay mud, landslide-prone hillsides, and areas susceptible to flooding. Moderate risk areas involve potential liquefaction, ground shaking, and some flooding. Low risk areas are susceptible to some liquefaction and some ground shaking.

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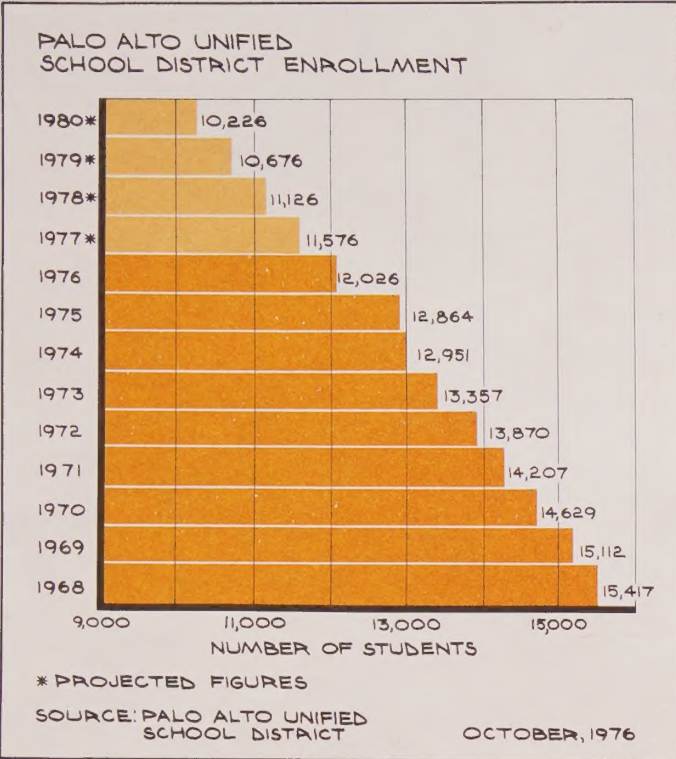
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Conservation

Conservation is the wise management of natural and man-made resources to assure their continued availability for use, appreciation, and enjoyment.

The objective of the conservation plan is to preserve and enhance the natural environment consistent with human needs. Excessive water runoff from the foothills must be avoided. Erosion of the soil must be minimized. Fire hazards in the foothills must be reduced. Restoration of water to the underground reservoirs must be increased. Prevention of damage to structures must be achieved with the least possible alteration of the natural ecology. Enhancement of the aesthetic environment must be consistent with human recreation needs and the preservation of wildlife habitat. The quality of air and water must be improved by providing pollution-free areas for percolation into the water table and healthy vegetation for photosynthesis.



Palo Alto's Baylands are a valuable scenic and natural resource. Within Palo Alto, most of the Baylands with open space potential are owned by the City and dedicated for park, conservation, and other open space purposes.

Environmental Resources Policy 3: *Encourage the re-use of treated water waste.*

Two programs will carry out this policy:

Environmental Resources Program 5: Inject treated water underground to reduce land subsidence.

Environmental Resources Program 6: Use treated water for irrigation.

Noise

Noise is a part of modern society. People can tolerate or ignore a certain amount of noise but adverse effects including outright hearing impairment, and other dangers to health are present in many exposures to noise.

The objective of this section of the Plan and Palo Alto's continuing Noise Control Program is to reduce noise which affects humans adversely.

Major sources of traffic noise are streets with high volume, high speed, a large number of traffic controls, or many trucks, buses, and other loud vehicles. Southern Pacific trains are another major source of noise.

Environmental Resources Program 14: Provide City enforcement of state muffler and exhaust system regulations.

In 1972, Palo Alto adopted a noise ordinance which has reduced the amount of noise through City enforcement of State motor vehicle regulations and control of non-vehicular noises.

Environmental Resources Policy 6: *Non-vehicular noise sources in Palo Alto should meet City noise ordinance regulations.*

The noise ordinance is primarily enforced by police officers. Most noise complaints about industry are made by residents of nearby areas when machinery runs during the evening. Engineering modifications to reduce the noise usually solve these problems.

Residential sources causing frequent problems are amplified music, parties, barking dogs, and power equipment. Noise ordinance controls apply to each of these disturbances.

Air Quality

Air pollutants are those substances found in the atmosphere which exceed naturally occurring quantities and are undesirable or harmful in some way. Many kinds of pollutants, including particles, mists, and gases have been identified. Most human activities cause some air pollution.

Environmental Resources Policy 9: *Mitigate impact of air quality problems due to stationary and vehicular sources.*

While major efforts to reduce air pollution focus on regional, state, and national agencies and programs, there is much that Palo Alto can do to reduce the amount of air pollution created and the negative effects of pollutants.

Environmental Resources Program 23: Review proposed projects to reduce negative air quality impacts.

Environmental Resources Program 26: In reviewing and granting building permits and in approving rezonings and subdivisions, the City should encourage builders and developers to provide improvements that will reduce the number of cars occupied by only one person. These improvements could include preferential car pool parking, bicycle storage, bus stop shelters, and substitution of landscaping for some required parking spaces.

El Camino will change only to the degree that the City takes positive actions and provides inducements to the private sector for change. Landscaped setbacks, much stronger controls of sign sizes, lighting, colors and screening of parking will help make El Camino a more attractive part of Palo Alto. These controls should be applied on a schedule that will eliminate out-of-character development within a reasonable length of time.

More significant changes in the strip will probably be brought about by the land use changes proposed in this Plan. The City encourages neighborhood commercial use, rather than regional commercial use, for El Camino.

Seismic Safety and General Safety

Seismic safety hazards include fault ruptures of the earth's surface, ground shaking, ground failures including mudslides, landslides, liquefaction, and slope instability, and the effects of earthquake-induced waves.

General safety involves the protection of the community from geological hazards, floods, and fires. Safety hazards such as building collapse, water, gas, sewer, and electric line damage; communications disruption; and fire or explosion potential are included.

The objectives are to reduce potential injury and loss of life and to lessen possible property damage.

Fault movement causing rupture of the ground surface is the most direct hazard to man-made structures. The last major earthquake on the San Andreas fault affecting Palo Alto occurred in 1906.



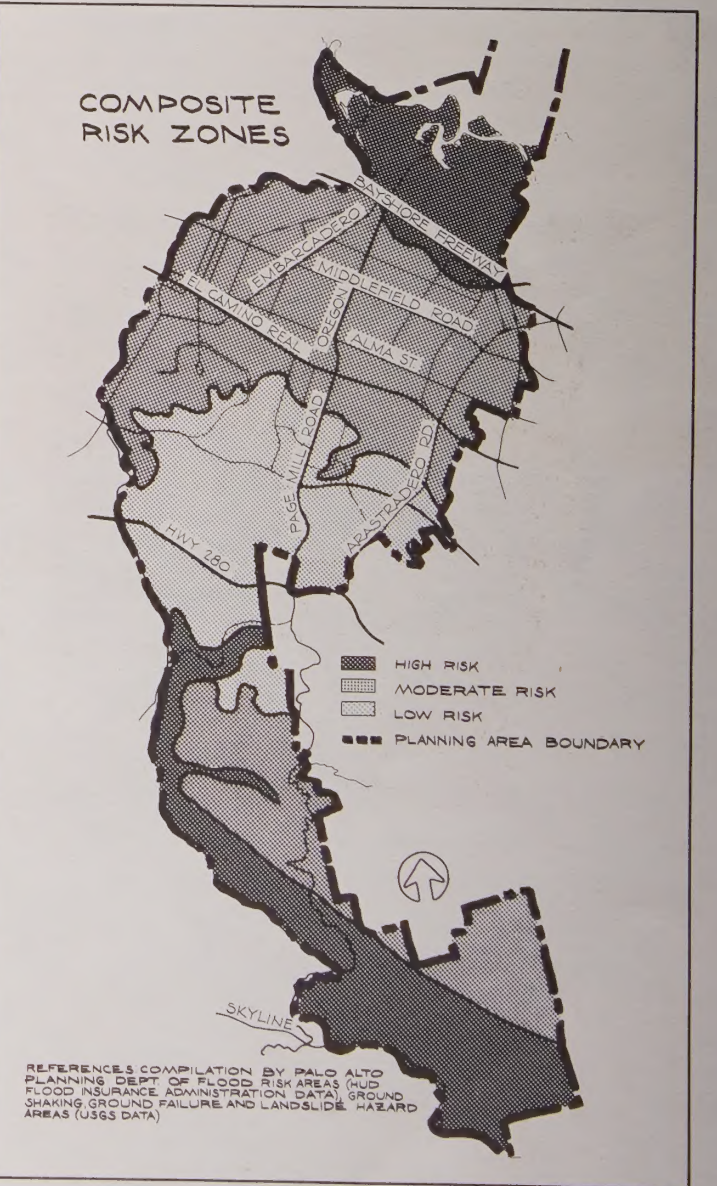
The 1906 earthquake caused extensive damage in Palo Alto. The photograph shows University Avenue looking easterly from the Circle.

Environmental Resources Policy 10: *Measures to lessen risk to human life and property should focus upon identified areas of population concentration and be keyed to areas of greatest natural hazard and areas of known or suspected structural hazard.*

Environmental Resources Program 29: The City should have a structural engineer inspect and evaluate all high-occupancy buildings and all buildings of more than two stories. City codes should be reviewed to ensure that a mechanism exists to require that public safety deficiencies are corrected by those responsible for the building.

An earthquake-proof building does not exist, but engineers have recently expanded their knowledge of the response of structures to stress. Lives are most threatened by hazards from damage to or collapse of structures. Continued staff monitoring of all plans and construction is a vital part of enforcement of revised codes.

There are many inexpensive measures that can be taken to improve the safety of hazardous buildings. Falling debris is a major hazard during and after an earthquake. It is recommended that the program be carried out in phases.



Fault line areas have the greatest risk for man-made structures. High risk is also associated with Bay mud, landslide-prone hillsides, and areas susceptible to flooding. Moderate risk areas involve potential liquefaction, ground shaking, and some flooding. Low risk areas are susceptible to some liquefaction and some ground shaking.

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